FEBRUARY 16, 1953

NEWS ISSUE

Electrical World

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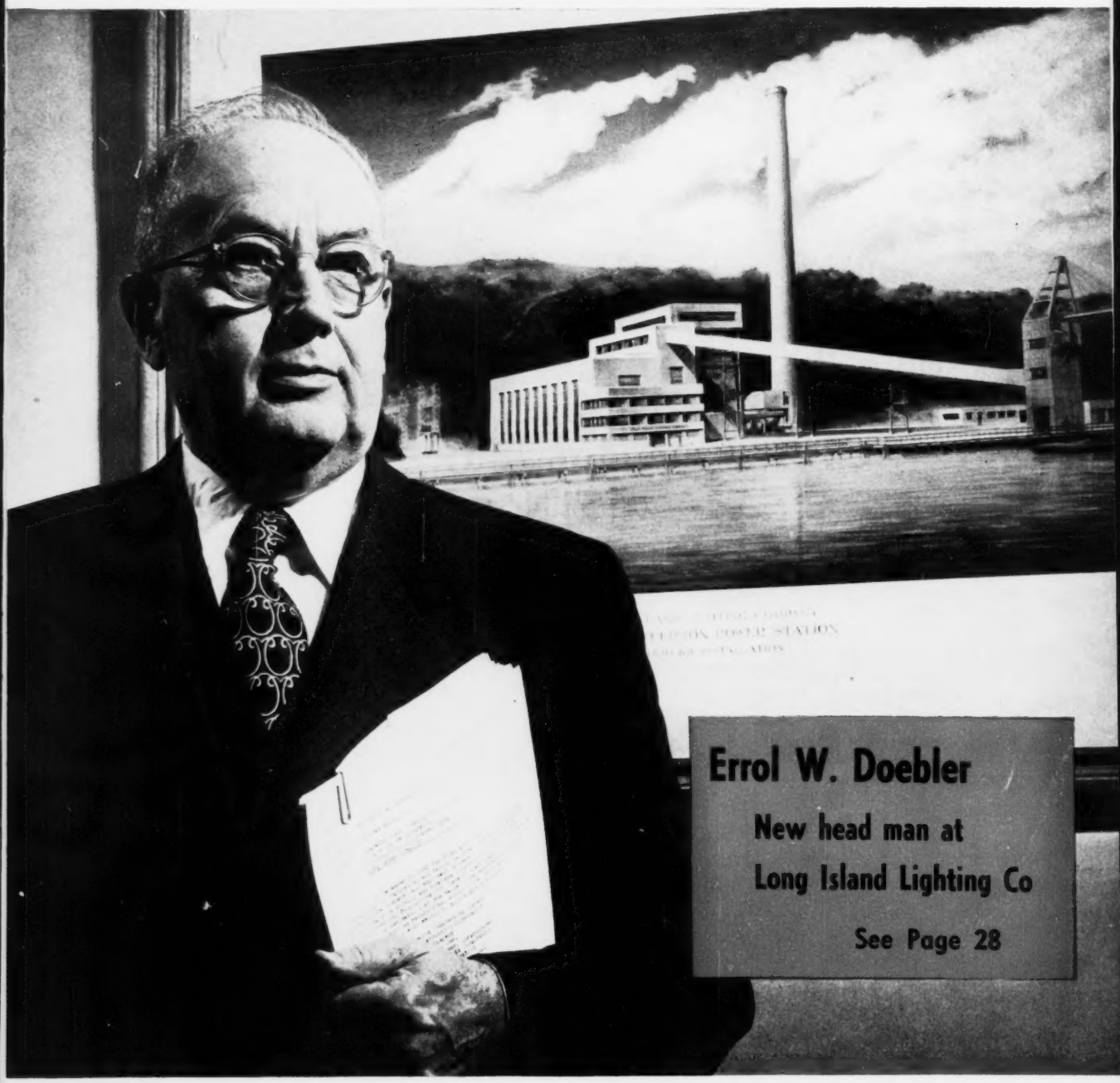


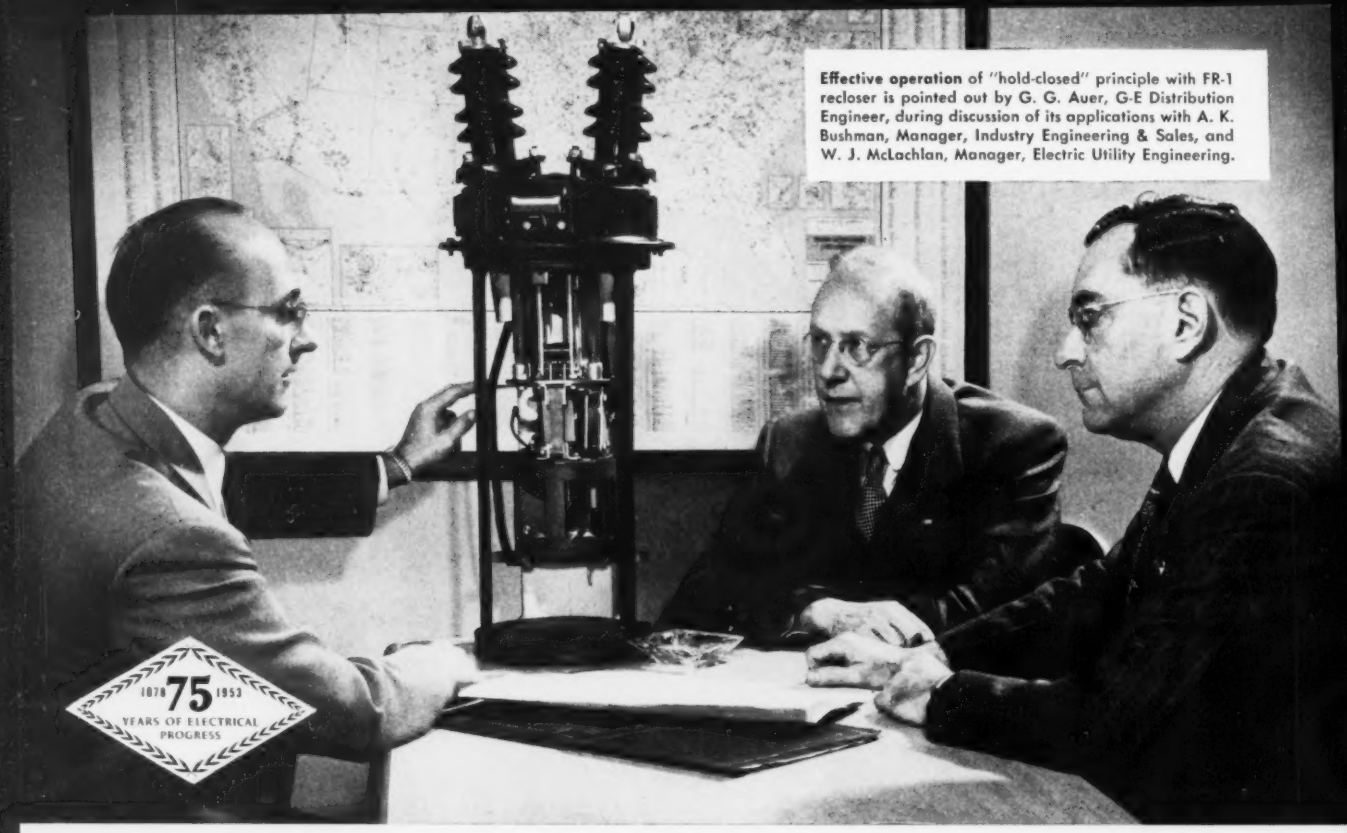
Errol W. Doebler

New head man at
Long Island Lighting Co

See Page 28

Punching Their Way Out of a Paper Snag . . . Page 16

The Home Cooler Market Is Growing . . . Page 50



Effective operation of "hold-closed" principle with FR-1 recloser is pointed out by G. G. Auer, G-E Distribution Engineer, during discussion of its applications with A. K. Bushman, Manager, Industry Engineering & Sales, and W. J. McLachlan, Manager, Electric Utility Engineering.

1878 75 1953 YEARS OF ELECTRICAL PROGRESS

Coordinated protection with hold-closed reclosers helps

REDUCE SYSTEM INVESTMENT, IMPROVE SERVICE

Since the "hold-closed" principle of recloser operation was first advanced by G-E engineers, installations by several electric utilities have proved so successful that widespread adoption is planned on many systems.

"Hold-closed" operation utilizes the recloser only for its important primary purpose of clearing transient faults. Set for one or two instantaneous openings, it holds closed instead of open if the fault persists. The function of isolating persistent faults is delegated to inexpensive fuse cutouts. The recloser resets automatically when the fault is cleared.

With properly coordinated fuses easily provided at main and branch line sectionalizing points, hold-closed reclosers make possible greatly simplified system protection. Fewer reclosers are needed, with consequent savings in equipment investment. The reduced number of recloser operations means less maintenance expense. Fuses usually confine outages to short sections and faults are more readily located, resulting in improved service.

A detailed discussion of the benefits of this new concept of system protection is given in a recent paper. Write for GER-131A. General Electric Company, Schenectady 5, New York. 301-210

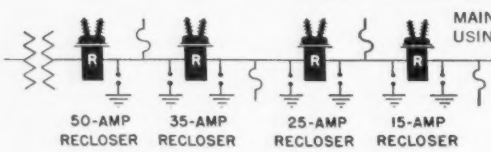
MORE POWER TO AMERICA

GENERAL ELECTRIC

Simple conversion to hold-closed operation is made by adding pin to General Electric FR-1 Recloser. Conversion can easily be made in the field. At right, chart shows possible $960 saving on equipment used on a 50 mile length of 3-phase line.

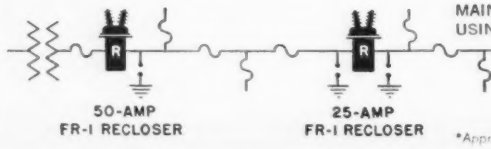
COST COMPARISON—CONVENTIONAL vs. HOLD-CLOSED OPERATION

50 MILES—3-PHASE LINE



MAIN LINE SECTIONALIZING USING CONVENTIONAL RECLOSERS

Reclosers:	12 at	$130 =	1560
Arresters:	21 at	34 =	714
Cutouts:	Nil	=	—
			$2274*



MAIN LINE SECTIONALIZING USING "HOLD-CLOSED" RECLOSERS

Reclosers:	6 at	$130 =	780
Arresters:	9 at	34 =	306
Cutouts:	12 at	19 =	228
			$1314*

*Approximate Equipment Costs

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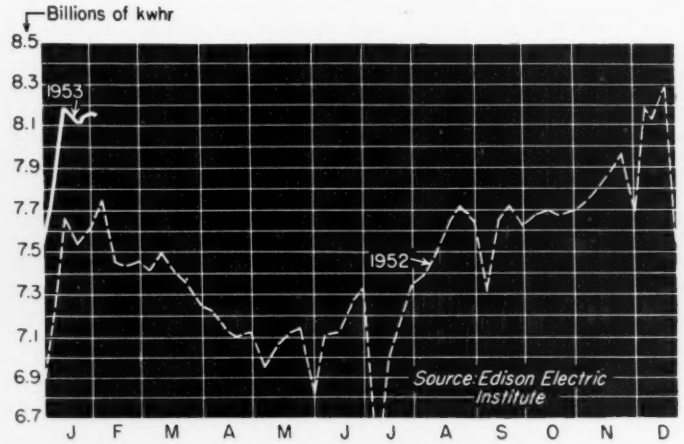
Electrical World



Output Week Ended Feb. 7—8,129,038,000 Kwhr

Per Change From Previous Year

	Total US	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
Feb. 7	+9.0	+10.4	+7.7	+9.7	+9.1	+11.4	+3.7	+10.1	+5.2	+10.9
Jan. 31	+7.6	+8.9	+6.0	+8.9	+7.1	+10.1	+5.4	+9.6	−0.1	+8.9
Jan. 24	+6.9	+8.1	+5.6	+8.8	+7.5	+10.6	+7.4	+8.9	−9.1	+7.1

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	Dec.	75.5	72.8	70.4
Capacity (Million Kw)	Dec.	82.05	80.91	75.54
Production (Billion Kwhr)	Nov.	33.75	34.82	32.10
Hydro		6.52	7.02	8.08
Fuel		27.23	27.80	24.02
Fuel Consumption				
Coal (Million Tons)	Nov.	9.93	9.92	9.74
Oil (Million Barrels)		7.75	7.16	5.96
Gas (Billion Cu Ft)		69.94	83.08	53.15
Sales (Billion Kwhr)	Nov.	30.08	30.15	27.92
Residential		8.16	7.72	7.37
Commercial		5.01	5.09	4.70
Industrial		14.91	15.16	13.89
Other		2.01	2.17	1.97
Net Income Class A & B Companies ($ Million)	Nov.	79.81**	64.86**	69.92
Estimated Dec. '53 Peak (Million Kw)	Nov.	87.3	87.2	88.3
Kwhr per Residential Customer (12 Month Average)	Nov.	2,155	2,143	1,988
Revenue per Kwhr Residential Service (12 Month Average)	Nov.	2.77¢	2.77¢	2.82¢
Canadian Production (Billion Kwhr)	Nov.	5.22	5.42	4.94

Business Statistics

FRB Industrial Production Index†††	Dec.	233*	235**	217
Gross National Product Annual Rate ($ Billion)	3rdQtr.	343.4	342.6	337.1
E. W. 5 Industry Production Index	Dec.	128.5*	128.5	124.6
ENR Construction Cost Index††	Jan.	123.1	123.2	114.8
BLS Consumer's Price Index	Dec.	190.7	191.1	189.1
NEMA Insulation Materials Sales Index†	Dec.	655	579	466
NEMA Electric Appliance Sales Index†	Dec.	268	251	218
NEMA Household Refrig. Sales Index†	Dec.	147	152	115

* Preliminary ** Revised † 1936=100 †† 1949=100 ††† Unadjusted

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A REAL BARGAIN

figured in years per dollar

If you ask the question, "Will this station insulator fit my system standards?", the answer can be found quite easily, as industry specifications rigidly define measurable qualities.

What if you ask, "How many years will this station insulator give satisfactory service?". There is no ready answer to this question -- at least not until those years are up!

Be sure to distinguish between what *can* and what *can't* be specified when you purchase station insulators; likewise be sure to recognize that the thing you want most, and the thing that determines your money's worth -- performance -- is not subject to standards or specifications. That's why there can be such a big difference between makes of products in such a highly standardized field.

Most O-B station insulators are bought on repeat order, by companies that have *had* their chance to gauge their money's worth. For a genuine bargain, figured in years per dollar, insulate *your* stations with O-B.

Ohio Brass

MANSFIELD • OHIO

4150-H

THE ELECTRICAL WEEK

The Issue's News Highlights—Interior Secretary Douglas McKay has named these top lieutenants: Ralph Tudor as Undersecretary, Fred G. Aandahl as Assistant Secretary for Water and Power, Orme Lewis as Assistant Secretary for Land and Indian Affairs, Clarence A. Davis as solicitor.

Defense Electric Power Administration has launched a new special priority program for designating urgency of electric generating facilities.

Off the Washington Wire—Personnel changes are getting first attention of the Eisenhower Administration. At SEC, resignation of Commissioner J. Howard Rossbach has been accepted but a successor was not immediately named. Seven men are under consideration for job of Reclamation Commissioner which was vacated last week. Six are engineers and one a lawyer. Interior Secretary Douglas McKay is looking for a man acceptable to both public and private power interests for top post at Bonneville Power Administration.

Despite tentative schedule set last week by legislative leaders, House of Representatives will have to work fast to clear funds bills by May 11. Hearings have been delayed on money legislation for the agencies dealing with electric power. Slow-paced hearings were underway last week on the bill which carries funds for AEC, FPC and TVA, but House Appropriations subcommittees did not get down to work on money bills for the Interior Department and the Army Corps of Engineers.

Power supply contract for Harvey Machine Co.'s proposed new aluminum plant near The Dalles, Ore., has been approved by Interior Secretary McKay. BPA, an Interior agency, will furnish the power.

Terms of a proposed agreement between Green Mountain Power and Burlington, Vt., for sale of excess energy from city's new generating plant and acquisition of company's distributing system inside Burlington have been completed. GMP plans to lease the plant for 7.5 years and to supply the city with energy at about 1¢ per kwhr. Voters are expected to pass upon another $2 million bond issue on March 3 to complete the new 27,000-kw steam plant, $4 million having been previously approved for the development.

New Hampshire PSC sets rate base of Public Service of N. H. at $74 million by majority vote of Chairman H. K. Davison and E. H. Hunter, special commissioner. "Jacona" floating steam plant reserve of $389,564 is reinstated in base, and "attrition allowance" of $1,626,346 is included in accordance with recent decision of N. H. Supreme Court (EW, Jan. 19, p 5). Permanent rate increase of $1,344,742 a year is allowed, and rate of return, unquestioned by High Court, remains at 5.65%. Minority report by Commissioner E. R. Thornton, declares that "Commission in line with past decisions, should adhere to original cost theory of rate base determination and relate base to period for which earnings are being tested."

Greenwood County, S. C., plans to buy transmission line which federal government has had to stop building between Greenwood and Clark Hill Dam because Comptroller General Lindsay Warren says it violates a proviso in last Interior Department appropriations bill, Congressman W. J. Bryan Dorn of Greenwood revealed. He says "We may have to pass a law to make the final disposal of the line. It may be surplus property." New Interior Secretary Douglas McKay is studying the legal aspects of the case.

Appalachian Electric Power is denied a $3,771,443 rate increase annually by West Virginia PSC . . . Natrona L&P gets Pennsylvania PUC approval to increase rates $38,704 a year effective Feb. 1.

Sen Marshall Korshak, D-Chicago, introduces bill in Illinois General Assembly to set up a new state agency empowered and equipped to resist petitions of public utilities for rate increases.

Electric Energy, Inc, will enlarge its Joppa, Ill., steam plant now under construction by 50% to be able to meet power needs of AEC's project at Paducah, Ky., which is being expanded. Joppa plant expansion calls for installation of two units rated at 312,000 kw to supplement original four units rated at 625,000 kw.

A bill is before Washington State legislature which will allow cities or towns to acquire by purchase or condemnation PUD electrical distribution facilities within towns or city boundaries . . . Rep Robert Patten, Jasper, Tex., introduces bill in Texas legislature to create a three-man state PUC with powers to regulate electric, gas and telephone utilities, except consumers' co-ops or those owned by cities.

Rep J. A. Gipson, Saline County, Ark., introduces bill in Arkansas House which will put a 1% sales tax on gross receipts of all public utilities in the state.

Bonneville Power Administration plans to test new 83,333-kva, FOA, single-phase mobile power transformer in near future. Mounted on railway car for fast delivery to any of BPA's 11 major substations in emergency, unit is believed largest mobile transformer in U. S.

In addition to meeting its own needs, Utah P&L, along with Idaho Power, delivered nearly 190 million kwhr in 1952 to power-short Pacific Northwest where "the federal government has assumed responsibility of providing electricity," Utah's Pres George M. Gadsby pointed out recently.

Congratulations—Harvey Broyles, under a rotating chairmanship policy, is designated chairman of Louisiana PSC, succeeding Nat. B. Knight, Jr. Under same policy James F. Lamb is succeeding Ingram B. Pickett as chairman of New Mexico Corporation Commission and W. Marshall King is designated chairman of Virginia State Corporation Commission, succeeding H. L. Hooker.

(*Continued on page* 10)

Fred Aandahl . . . and Ralph Tudor . . .

will be "active bosses" under Secretary Douglas McKay as

GOP Puts its Imprint on Interior

The new Republican Administration is putting its imprint on the Department of Interior, largest marketer of government-produced power and second largest builder of civil works projects.

Secretary Douglas McKay last week began installing his own men in top positions at the department. Views expressed by McKay and his new interior team foreshadow these changes:

- Reorganization of the department along functional lines with clearly defined areas of responsibility and with emphasis on economy.
- More strict adherence to laws relating to marketing and transmission of power from government-owned hydroelectric projects.
- Broader participation by state and local interests in waterway development, and a long-range move toward disposing of lands now held by the federal government.

McKay himself set the broad outlines for a revamped organization at the department.

Undersecretary Ralph Tudor, widely known engineer who moves into the Interior job next month, will handle administration.

Within statutory limits, Tudor will have a free hand to reshuffle organization with an eye to efficiency and economy. He has the full confidence of McKay, who says candidly, "Tudor will run the department." This will leave McKay to handle policy matters and public duties that fall to a cabinet member.

Tudor has given no definite assurances as to how long he will serve. It is no secret that he left his San Francisco engineering firm with reluctance and hopes to return to it when possible. However, McKay is convinced Tudor will stick to his Interior job "until he has put the department on a basis that anybody could run it."

McKay has made it clear that his assistant secretaries will be fully responsible for the duties delegated to them. There will be, he says, no more of the short-circuiting of authority which characterized the Chapman administration at the department. Underlings will have a chance to appeal to him for consideration, but the appeals will be passed through the established chain of command. The move is to make the assistant secretaries "active bosses" of the numerous agencies under their immediate jurisdiction.

The New Men

Tudor will assume his Interior duties as soon has he can sever active connections with Tudor Engineering Co of San Francisco, which he owns.

In testimony before the Senate Interior and Insular Affairs Committee recently, Tudor said he would continue to hold the major financial interest in the firm, but arrangements had been made for transfer of government contracts to associates. A junior partner will run the business until Tudor returns.

Fifty-year old Tudor is a native of Colorado Springs, Colo., but has lived in Oregon and California. He is a graduate of the U. S. Military Academy at West Point and received his C. E. degree from Cornell University.

He has served as an engineer with the Army Corps of Engineers, with the State of California and with private industry. He helped design the San Francisco Bay Bridge, and as a district engineer during World War II had a hand in planning McNary and The Dalles Dams for the Pacific Northwest.

At the hearing on Tudor's confirmation, Senate committee members praised his qualifications and said they were glad to see an engineer nominated to the high position.

Only catch question came from Democratic Sen Henry M. Jackson of Washington: "I take it this is not an attempt by the Army Corps of Engineers to infiltrate the Interior Department."

With a twinkle in his eye, Tudor shot back, "I think not, sir."

Fred G. Aandahl, former governor of North Dakota, is the new Assistant Secretary for Water and Power. Under his jurisdiction are Bureau of Reclamation, Bonneville Power Administration, and Southeastern and Southwestern Power Administrations. The position has been vacant since William E. Warne left the department in 1951, and most of the duties have fallen to the Undersecretary.

Aandahl, 55, was a member of Congress for the last term. He will direct the major irrigation and power activities of the department. The Truman Administration budgeted more than $150 million for construction in fiscal 1954 by the four agencies which Aandahl will head. He is responsible for marketing power from all government-operated projects except those under Tennessee Valley Authority. Installed capacity of plants under his marketing jurisdiction is well over 5 million kw.

The Senate committee considering his nomination tossed him some hot questions before unanimously approving his confirmation. Gist of his replies, intended only to reflect his general philosophy, indicated these views:

- It would be "very well" to consider turning over civil works projects to local bodies once the federal investment has been repaid.
- Preference and priority clauses relating to disposal of electric energy appears to be a good policy, but federal transmission lines should not extend beyond a feasible transmission distance from government hydroelectric projects.
- The Interior Department should not build steam generating plants, and any trend toward nationalization of the power industry should be halted.
- While local ownership and operation of waterway projects should be encouraged, there is often a broader interest which requires federal participation.
- As long as the federal government continues to appropriate money for a project, it must continue to have an interest in its operation.

A former chairman of the Missouri Basin Interagency Committee, Aandahl has long been active in water development and conservation matters. He is a farmer and a former school superintendent.

Straus Is Out

Last week, Michael W. Straus, a holdover from the Chapman regime, resigned as Commissioner of Reclamation. Until the vacancy can be filled, Aandahl will take on direct supervision of the Reclamation Bureau.

In his letter of resignation, Straus suggested that Milton Eisenhower, brother of the President, would make an able Commissioner of Reclamation. He disclosed that Milton Eisenhower had once been asked to take the position, but had refused.

Orme Lewis, a Phoenix, Ariz. lawyer, is resigning as a director of Arizona Public Service Co to become Assistant Secretary of Interior for Land and Indian Affairs. Senate committee members made it apparent they considered the directorship and his 2,500 shares of stock in the company as a deterrent to confirmation.

Arizona PS has a contract with Bureau of Reclamation for the purchase of power from Parker Dam. The company also wheels some government-produced power and has an occasional need for rights-of-way across government lands. Lewis will have general supervision of the department's bureau of land management, which handles rights-of-way matters. He has no direct connection with Reclamation.

But Sen Jackson, public power advocate, said it appeared to him the situation was similar to that of Defense Secretary Charles E. Wilson, who was forced to dispose of his General Motors stock.

Lewis then broke in to say, "In view of this discussion, I am going to dispose of this stock."

Clarence A. Davis, a Lincoln, Neb., attorney, takes over as solicitor at Interior replacing Mastin White. Davis is a close friend of Sen Hugh Butler, Nebraska Republican and chairman of the committee which considers confirmation of Interior appointees.

There was still a long list of Interior positions to be filled by the Republicans. It is now taken for granted that BPA Administrator Paul J. Raver will be ousted, but a successor has not yet been found.

High Priority . . .

. . . set by Depa on generating facilities to serve atomic energy installations

New special priority program for designated electric generating facilities has been launched by Defense Electric Power Administration.

List of the units eligible for the E-5 rating was completed last week by Depa and utilities constructing the facilities are being notified. Designated high-priority units are to supply power for atomic energy installations on either an interim, firm, or backup basis.

New program was announced late in January (EW, Feb. 2, p 7), but did not get going until last week because the necessary legal steps had not been completed. These included amendment of Regulation M-50 under which controls are administered for electric utilities.

Equal Priority for Some Projects . . . The amendment extends an E-5 rating, equal to priority given for direct military or atomic energy projects, to power facilities designated by Depa. The agency at mid-week still had not decided whether its list of designated projects should be made available to the public.

Previously the number of units eligible for such priority treatment had been set at 56, but this was subject to revision either upward or downward. At least 30 generating units scheduled for completion within the next three years are slated to produce firm power for Atomic Energy Commission plants at Oak Ridge, Tenn.; Paducah, Ky.; and near Portsmouth, Ohio. A number of other units will serve power to these plants either on an interim or backup basis.

The new ratings will enable electric utilities constructing the facilities to substitute E-5 ratings for their present H-3 ratings on orders for equipment and materials. The new ratings may, in turn, be used by equipment manufacturers in acquiring components for the priority units.

Meanwhile Munitions Board threatened to fight the high priority ratings for utility facilities on the grounds that they should be reserved for direct military and atomic energy projects. The showdown should come during this week.

Joint Plan for Priest Rapids

Tacoma and Seattle City Lights want to combine forces to build $220-million project on Columbia River

First joint construction project of Washington state PUD's and municipalities is likely to be a $220-million hydroelectric dam across the Columbia River at Priest Rapids, according to representatives of the agencies involved.

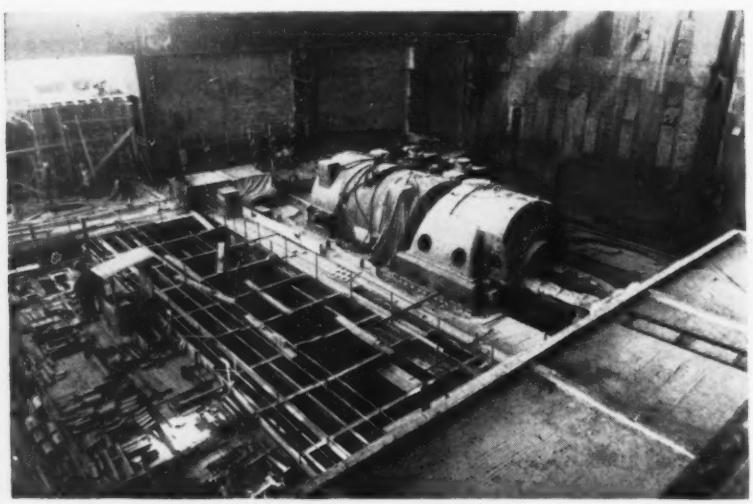
Reports that PUD officials have been conferring with the City Light departments of Seattle and Tacoma on a joint construction program have been published earlier in ELECTRICAL WORLD, but no specific project was mentioned.

Dam Would Be Low . . . The proposed dam would be built by Seattle City Light, Tacoma City Light and the Grant County PUD, cooperating through a state power commission under enabling legislation now under consideration. In an effort to meet objections of the Atomic Energy Commission against a high dam, whose destruction in an atomic attack would destroy the commission's Hanford Works downstream, the public agencies propose a lower dam capable of providing 1 million kw of power.

Federal Obstacle . . . The Corps of Engineers received authorization from Congress in the Flood Control Act of 1950 for a multi-purpose Priest Rapids dam developing 150 ft of head with a total proposed power output of 1,219,000 kw at an estimated cost of $340 million. Congress would have to withdraw this authorization before the Federal Power Commission could grant a requested dam license to the Grant PUD.

The public agencies propose to finance the dam with a bond issue. They don't want to take over the power field, a spokesman said, but want to be on equal terms with all others in it, especially if the federal government pulls out of the picture.

Meanwhile, Phil A. Strack, president of the Seattle Chamber of Commerce, urged state-wide support for Gov Arthur B. Langlie's plan to set up a stronger state power commission. He proposed that the commission be empowered to construct and operate generating plants and transmission lines and to purchase federal lines and power generated by federal plants (See page 35).



U.S. Generator for Tel Aviv Plant

A large portion of the money being raised through the sale of Israel Bonds in the United States is being used to expand the new nation's power industry. The 50,000-kw generator shown above, purchased with bond funds, is being installed in a new power station in Tel Aviv. Sale of bonds also has enabled Israel to purchase a second 50,000-kw unit for installation at the plant.

Capacity of Israel's generating plant totaled 110,000 kw when the bond drive started in May 1951. This figure has been raised to 130,000 kw and will get a big boost when the new Tel Aviv station goes on the line.

Net Increase in Capacity Was 6,342,558 Kw in '52

Capacity of electric utilities in the United States showed a net increase of 6,342,558 kw during 1952, according to preliminary figures recently released by Federal Power Commission. Total capacity of utilities amounted to 82,117,283 kw at the end of 1952, FPC reported, and combined utility and industrial capacity totaled 97,180,369 kw.

In another report, FPC noted that electric utility power plants consumed 19.4% more gas in 1952 than in 1951. The total for 1952 was 911,866,605,000 cu ft compared with 763,898,241,000 cu ft in 1951.

Coal consumption by utilities increased 1.2% from 1951. Consumption in 1952 was 107,039,868 tons compared with 105,768,006 tons a year earlier. Fuel oil requirements of 67,119,517 barrels in 1952 were 5% above the 63,724 barrels burned in 1951.

Isolated Arizona Spot Gets First Electricity

The "strip country," isolated portion of Arizona north of the Colorado River, is getting its first electrical energy as the result of cooperative action by the Arizona Power Authority and the Overton & Lincoln Power Districts of Nevada.

Arrangements for delivery of 200 kw to the Littlefield, Ariz., area were made in the first formal meeting of the two commissions.

This was the first in a series of negotiations between the two groups designed to provide off-peak power swaps. The southern Nevada area is crictically short of power for domestic and industrial use and seeks 750 million kwhr of energy annually.

According to A. E. Thomas, chairman of the Arizona Power Authority, his state has no power surplus. But peak loads are in summer time while Nevada's are in the winter and an arrangement for off-peak loads would be mutually advantageous.

THE ELECTRICAL WEEK

already under way if need be to conform with the "clearly

PGE Renews Bid . . .

. . . for permission to build Pelton Dam by going to Oregon legislature for revision of law

Portland General Electric Co. denied Oregon Hydroelectric Commission permission to build Pelton Dam and powerhouse on the Deschutes River, has carried its fight to the Oregon legislature.

Pending before the House Committee on State and Federal Affairs is a bill to provide for increasing the commission from three of five members, requiring each of the four congressional districts to be represented on the commission, and for the right of appeal of its rulings to the circuit courts. The existing law does not provide for appeal and PGE suffered a setback in its attempt to have a circuit court order a new public hearing.

Two Moves Under Way . . . PGE's legislative bid is one of two moves under way when the 1953 session assembled. The other, tentatively held in abeyance, would have brought into the legislature an outright request for a resolution permitting construction. This was supported strongly by central Oregon chambers of commerce and others supporting PGE's proposed Pelton Dam and a related project at Round Butte.

Opponents to the "PGE Bill" raised the issue of an emergency clause affixed to the "PGE Bill." This would make the act effective upon its being signed by the governor, rather than after customary waiting period, and also remove it from referendum powers of the people. In answering this, PGE Vice Pres Waldemar Seton explained the project was certified by the Federal Power Commission 15 months ago and by Defense Production Administration as essential to the defense program under the fast tax amortization program. Seton said it was felt that haste in the start of construction was essential at this time.

Some Opposition . . . Principal opposition has come from sports and commercial fishermen and wild life conservation groups. The Oregon Fish Commission's refusal to approve salmon conservation plans of PGE's project was involved in the hydroelectric commission's denial of a license.

A Wilson Salutes an Edison

Charles E. Wilson, former president of General Electric Corp, paid tribute to Thomas Alva Edison on the occasion of the inventor's 106th birthday anniversary Feb. 7.

Wilson spoke in New York at the 36th annual luncheon of the Edison Pioneers, of which he has just been named president. With him on the rostrum were Charles Edison, (left) son of the inventor and honorary president of the Pioneers, and James A. Farley, not shown. Farley spoke on "Thomas Edison, the Man, the Inventor and the Philosopher."

California Solon Seeks CVP Power Sale Curbs

When the California legislature reconvenes Feb. 24 it will consider two bills which would prevent any hydroelectric power from the Central Valley Project from being sold out of the state until all local needs have been met.

Both bills were introduced in the assembly by Democrat Lloyd Lowrey. One would stop the State Public Utilities Commission from approving any agreement to wheel power out of the state until California needs have been satisfied, and would also provide for ending any such contract if a need for the power developed in Sacramento.

The other bill would not allow any water to be appropriated for development of power out of California if more power could be utilized in the state.

Code Review Board Set Up

An Electric Code Review Board has been appointed at Seattle, by Mayor Allan Pomeroy to review rulings pertaining to the city's electrical code and to recommend changes. It consists of C. D. Casey, representing electrical contractors; N. L. Bost, electrical manufacturers; Leon B. Benson, electrical wholesalers; B. A. Travis, consulting electrical engineers; Dave M. Davis, journeymen wiremen; J. D. Gawne, City Light, and John Watt, city building department.

THE ELECTRICAL WEEK

CONTINUED

AEC Chairman Gordon Dean intends to retire from government service when his present term expires June 30 and practice law in Washington . . . Robert C. Sprague, formerly president of Sprague Electric Co of North Adams, Mass., says that, because of his $5-million holdings in Sprague Electric, "it has now been decided, finally, not to send my nomination as Under Secretary of Air Force to the Senate for consideration."

Bureau of Reclamation charges in a brief filed in suit to set aside FPC's permit order, that FPC lacks jurisdiction to issue licenses for power developments on North Fork of Kings River because the major portion of land had been withdrawn from public entry.

Corps of Engineers has revealed that Chief Joseph Dam on upper Columbia River will not only produce power earlier than scheduled but will cost less.

West Penn Electric stockholders subscribed for 256,123 common shares of 264,000 offered on 1-for-15 basis at $34 per share to yield 6.47%. Balance of 7,877 were taken by Carl M. Loeb Rhoades & Co, underwriters.

Wynne, Ark., City Council endorses two measures now before Arkansas legislature. One will eliminate present regulation by which utilities can raise rates simply by posting bond with PSC and putting increase into effect immediately pending PSC decision. Other will require a utility seeking a rate hike to make an amount of money equal to what they plan to spend available to PSC to pay for investigation of case . . . Indiana legislature gets bill which will repeal 1947 Compulsory Utility Arbitration Act, preventing utility strikes.

IN THE INDUSTRY

The Eisenhower administration has taken its first steps toward economy. Where they will lead to nobody knows, and a lot of the "knowing ones" think that they will lead in circles. But for the electric utility industry, one of the nation's top taxpayers, and a firm opponent of the federal power program, the thought of economy in Washington is intriguing.

Criteria for Approval Established . . . Under an economy order issued Feb. 3 by the President and Budget Director Dodge all federal construction contracts face a one-month or two-month slowdown. Advertising and opening of bids will continue, but no contracts will be awarded until they have been cleared by department heads. But each Secretary has already been given these criteria as a base for clearing projects:

1. Proceed only with those projects that are clearly essential, and on such projects employ the strictest standards of economy.
2. Review all proposed or authorized construction on which work has not yet begun; propose construction for the rest of this year and until June 30, 1955 only if the projects are "clearly essential."
3. Stop construction, slow down, or reschedule any project already under way if need be to conform with the "clearly essential" policy.
4. Eliminate unnecessary programs, question all work in this light, and above all do not permit increase over the January rate of obligations except on complete justification and specific approval unless some law specifically requires it.
5. Review all programs preparatory to making recommendations for revising Truman's 1954 fiscal year budget downward. These recommendations for economy must be in the hands of the budget director by March 2.

These criteria are a step in the right direction, but there is Congress to consider.

Twice Truman Tried to Economize . . . In 1946 Truman tried to cut the outlay for federal public works from $1.25 billion to $900 million. Congress balked and the figures went over a billion. Again in 1950 after Korea Truman called for a cutback to save materials for the defense effort. This ban too didn't amount to much. One always must remember that Congressmen are never too enthusiastic about eliminating projects for their own districts or states.

In cases where contracts have been awarded but the work has not been started, any cancellation would make the government responsible for damages. These damages could be steep.

There are very few power projects that can be eliminated. Projects under construction and those for which contracts have been awarded will be completed though perhaps in a modified form. But the attitude of the new administration does give the industry a better chance to fight the granting of contracts for new projects. Included are those in Reclamation's 1954 budget Deer Creek on the Provo River in Utah, American Falls on the Snake in Idaho, and Roza Plant of the Yakima Project in Washington. There are also many transmission lines and facilities which would come under the directive. It is up to the industry to scan all proposed federal power construction. If this construction does not appear to be "clearly essential," it should be opposed.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Due date is the basis for scheduling a watthour meter for periodic test in three companies versus two that schedule on a geographical area basis.

Fouled turbines are being "soaked" from 15 to 60 minutes with solutions employing 100 to 500 pounds of caustic. Rinsing follows for 3 to 20 hours to reduce caustic and silica concentrations to a very few parts per million.

One idea gleaned from a meeting can often be worth the whole cost of the round-trip and the stay to listen in.

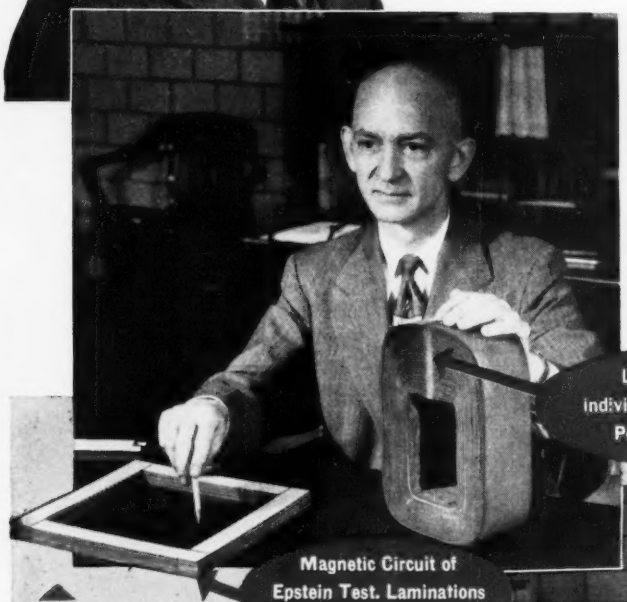
Drops of adhering water on a transmission conductor are a worse generator of radio noise than stranding, irregularities or sharp projections on the surface.

Pure commercial magnesium cannot be depended upon to produce more than 60% as much ampere-hour output as corrosion-protection anodes of alloy containing 6% aluminum and 3% zinc.

"There are Good Metallurgical and Design Reasons for the Low Exciting Current and Low Core Loss of the POLE STAR"

says Clarence J. Witsberger, *Electrical and Metallurgical Engineer*
PENNSYLVANIA TRANSFORMER COMPANY
Member ASTM Committee A6 on Magnetic Properties

Modern distribution transformers are fabricated of preferred oriented grades of cold reduced silicon steels. It is desirable therefore to take full advantage of the high permeability and low loss characteristics of this fine grade steel. This is accomplished in the Pole Star core design.



Laminations individually lapped in Pole Star core

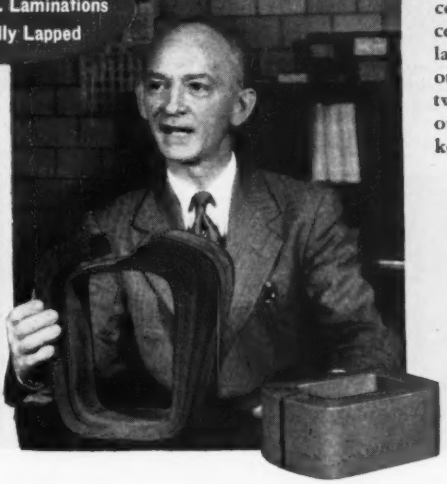
Magnetic Circuit of Epstein Test. Laminations Individually Lapped

Low Reluctance at Lap Joint Results in Low Exciting Current

A minimum reluctance at the joint of the Pole Star Core is achieved by lapping the individual laminations. This is the same type of lap joint used in the magnetic circuit of the latest approved method for testing the permeability of preferred oriented cold reduced silicon steels. This test is known as the 25 cm. Epstein Test for core loss and permeability. The Pole Star core achieves a low exciting current by combining High Permeability Steel with a low reluctance joint.

Absence of Adhesions in Core Results in Low Core Loss

The core is carefully annealed in controlled-atmosphere furnaces, but does not suffer the disadvantages of adhesions. That is because in the core assembly process—when the core is built into the coils—the laminations are separated from each other. The absence of adhesions between laminations and the presence of high interlamination resistance keeps the core loss at a low value.



Pennsylvania TRANSFORMERS — POLE STAR

Pennsylvania
TRANSFORMER COMPANY
CANONSBURG, PENNSYLVANIA
Greater Pittsburgh District

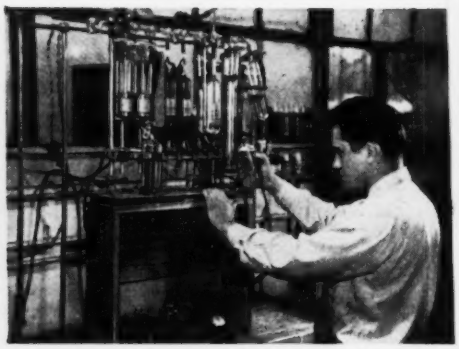
MOLONEY HiperCore

MATERIAL CONTROL

1.
MATERIAL CONTROL

All materials used in the manufacture of HiperCore Distribution Transformers are tested before fabrication to be sure that Moloney specifications have been met.

Tests of sample from each roll of oriented silicon core steel are made for flux carrying capacity, exciting current losses, weight, thickness and uniformity of laminations.



A transformer is no better than its oil. Complete ASA tests are made on samples of every tank car of oil received at the Moloney plant. In addition a series of special tests has been devised by Moloney to guarantee uniform quality of each shipment of oil. These tests are all in addition to tests made at the refinery.

PROCESS CONTROL

2.
PROCESS CONTROL

Each core and each coil is tested separately after being wound and again tested during various stages of assembly to be sure that each is of the high quality required in HiperCore Transformers.

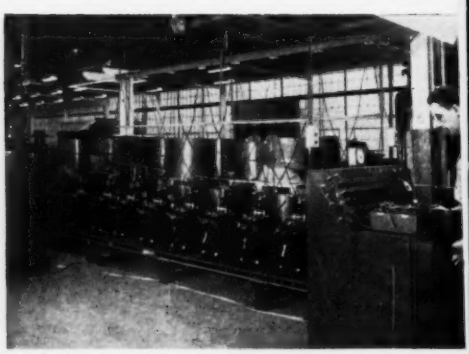
Each HiperCore core is tested after annealing and impregnation for hysteresis and eddy current losses before and after cutting.

Each HiperCore coil is tested for proper ratio of turns between windings in all tap positions.

3.
PRODUCT CONTROL

Every HiperCore Transformer receives complete ASA tests before leaving our factory. Periodic surge tests of transformers taken at random from the production line are also made on our 3,600,000 volt surge generator.

Each assembled core-and-coil unit with necessary tap changers and other internal accessories is tested before being tanked.



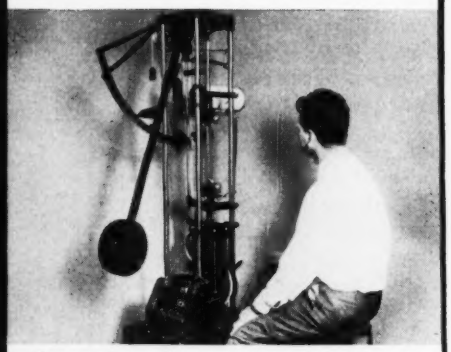
Final HiperCore tests and final ASA Standards Tests are made on all transformers. Included are loss tests, exciting current tests, polarity check, ratio check and dielectric tests.

M O L O N E Y E L E C T R I C

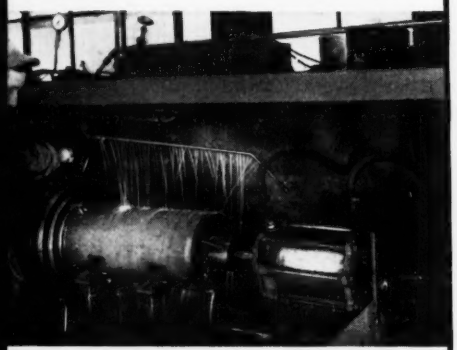
Manufacturers of Power Transformers • Distribution Transformers • Load Ratio Control

FACTORIES AT ST. LOUIS 20, MISSOURI AND TORONTO, ONTARIO, CANADA

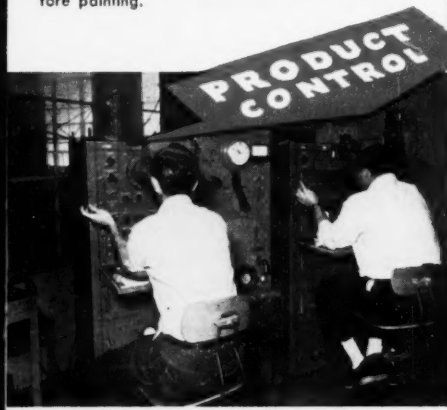
DISTRIBUTION TRANSFORMERS



Comparative tensile strength tests are made on samples of new material and on samples which have been aged in oil to determine the ability of the product to withstand the deteriorating effects of the oil.



Each HiperCore transformer tank is individually pressure-tested in this special spray machine, before painting.

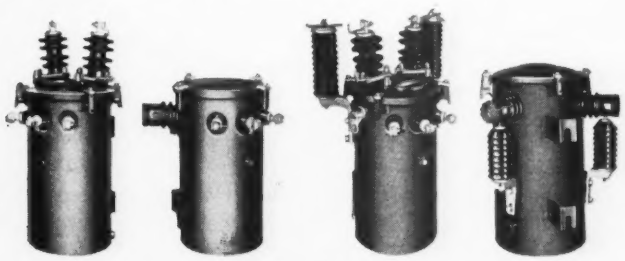


Periodic surge tests are made on samples from the production line. Film strip of cathode ray oscillograph reveals capacity of transformer to withstand surges in excess of those normally encountered in service.

Step by Step... tested to be BETTER!

From the first step in the manufacture of Moloney HiperCore Distribution Transformers a *better* transformer is in the making. ASA tests prescribed by the industry are made to be sure that our product conforms to industry standards, but many additional tests are also made in all stages of manufacture and assembly to insure *better* all-around performance in the finished product.

This *Better Performance* starts with quality control of the raw materials and does not end until the transformer is completed. The fine reputation of Moloney Transformers, which is taken for granted by many utilities, has been achieved because of these rigid controls.



Moloney HiperCore Distribution Transformers are available in all standard ratings from 3 Kva up in both Conventional and CSP designs.

ME53-1

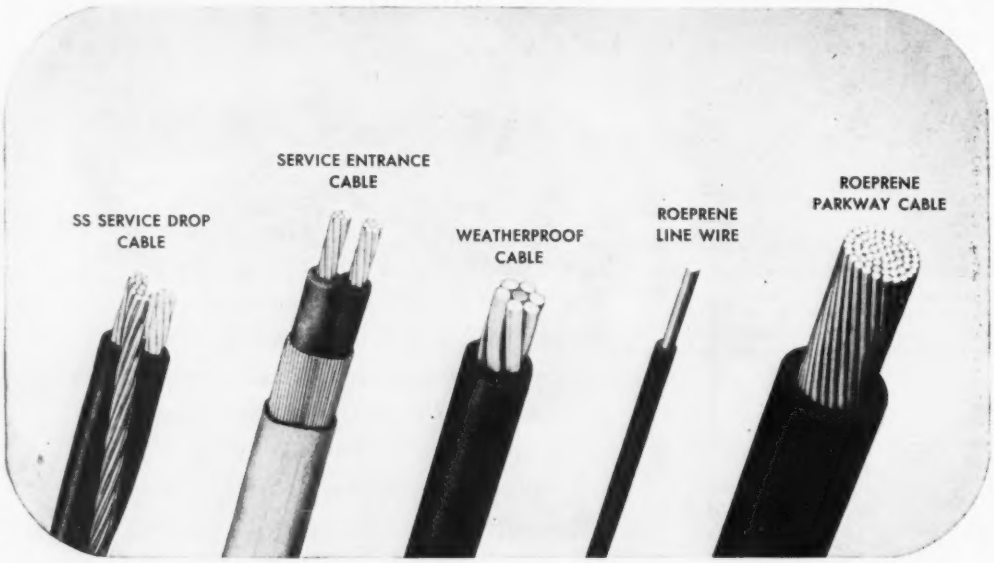
C O M P A N Y

Transformers • Step Voltage Regulators • Unit Substations

SALES OFFICES IN ALL PRINCIPAL CITIES

MOLONEY ELECTRIC = { BETTER PERFORMANCE / GREATER RELIABILITY / LESS MAINTENANCE

ALUMINUM WIRE AND CABLE



Here are five important types of Roebling insulated wires and cables available with ALUMINUM CONDUCTORS

This broadening of the Roebling line gives you the choice of copper or aluminum conductors for: Roebling Self-Supporting Service Drop Cable, Type SS (uninsulated neutral can be furnished in solid copper or aluminum wire, or copper, aluminum or ACSR strand) ★ Roebling Service Entrance Cable, Type SE—Style U ★ Roebling Weatherproof Wire and Cable, Type URC (available with copper, aluminum or ACSR stranded conductor) ★ Roeprene Line Wire ★ Roeprene Parkway Cable, Type RR. Order from your Roebling wholesaler. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. & 5 PITTSBURGH ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FRECONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. & 120 S. HEWITT ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • PITTSBURGH 1901 CLARK BLDG. • ROCHESTER, 1 FLINT ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • ST. LOUIS, 3001 DELMAR BLVD. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, NEW JERSEY

McKay Tackles Surcharges

Interior head promises to try to find an equitable solution to a problem which has been vexing Northwest utilities

Interior officials are taking a close look at the surcharge problem now plaguing Pacific Northwest electric companies.

No immediate relief is promised, but a sympathetic approach is being made to determine federal responsibility for spreading these extra power costs among a larger number of power users in the area. There is even the possibility that some of these charges can be absorbed by Bonneville Power Administration, which normally produces more than 60% of the energy in the area.

Surcharges are levied to cover the cost of abnormal steam generation in the area during the recent drought. Because of existing interchange contracts, these extra costs are borne by the utilities, public and private, which operate the steam plants. Since electric companies own nearly all of the steam plants, their customers bear the brunt of the added burden (EW, Feb. 2, p 15).

Into the Pool . . . However, such publicly owned systems as City of Tacoma and Cowlitz Public Utility District also have steam plants, and their customers are also affected. All of the energy produced at steam plants goes into the area power pool so that all utilities benefit from the added energy, although only those operating the plants bear the added costs.

Interior Secretary Douglas McKay, former governor of Oregon, has promised to give this problem "top priority" at the department. If the situation cannot be remedied administratively, he may ask for legislation from Congress.

Since most of the affected companies are in his home state, McKay is well acquainted with the problem and under extreme pressure to help solve it.

His own opinion is: "The present policy with regard to handling this matter (the surcharge) is dead wrong." He is convinced the burden of abnormal steam plant operation should be spread among all members of the Pacific Northwest Power Pool.

Can It Be Done? . . . Whether this is possible under the Bonneville Act is open to question. McKay's first move is to ask his new solicitor, Clarence A. Davis, for an opinion. Some BPA officials believe there is a real question as to whether the law will permit interchange contracts which would spread the extra costs.

BPA Administrator Paul J. Raver arrived in Washington early last week for a round of conferences with McKay on the surcharge problem. In the so-called Bonneville steam plant bill, introduced in Congress in 1950 but never passed, there was a provision for the sharing costs of steam plant operations.

25-Million-Kva Breakers Being Built for OVEC

Orders have been recently placed for 49 of the world's largest oil circuit-breakers to protect the power transmission system of Ohio Valley Electric Corp.

Each breaker will have an interrupting capacity of 25-million kva. Largest in use today have a 10-million-kva interrupting capacity, although breakers of 15-million-kva are on order and under construction. The breakers, costing more than $6-million, will protect the 330-kva transmission lines carrying power from two OVEC generating plants on the Ohio River to the Atomic Energy Commission's new $1.25-billion uranium diffusion center now under construction near Portsmouth, Ohio.

General Electric Co will build 32 of the breakers, and Westinghouse Electric Corp 17. They will be delivered in 1954 and 1955.

Contracts also have been awarded, it was announced, for general construction work on OVEC's two power plants.

Contract for the 1 million-kw Kyger Creek Plant near Cheshire, Ohio, was let to two Pittsburgh, Pa., contractors in a joint venture. They are Booth & Flinn Co and Ferguson & Edmondson Co. Contract was for more than $6.5 million.

Sollitt Construction Co, South Bend, Ind., received the contract for the 1.2 million-kw Clifty Creek Plant near Madison, Ind., on a bid of more than $8 million. The contracts are for general building construction and foundation work. It is expected this work will get underway at both plant sites within the next 45 days. At peak of construction, the Clifty Creek project will require approximately 2,000 workers; the Kyger Creek project, about 1,600.

POWER BRIEFS

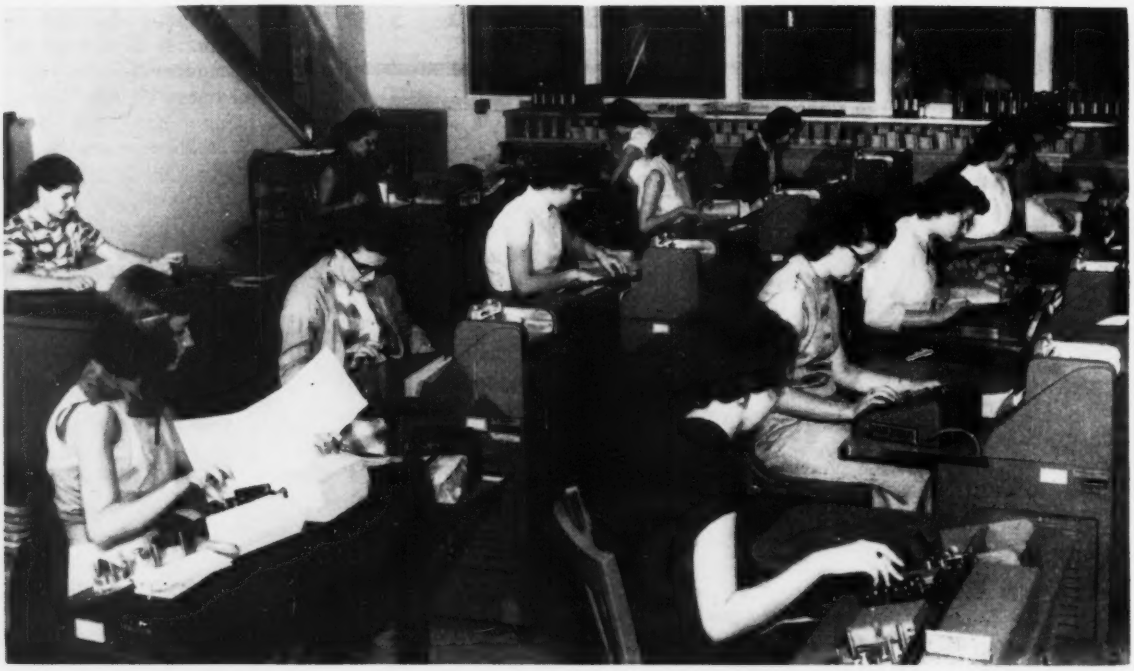
● Headquarters of Public Utilities Association of the Virginias are being transferred from Charleston, W. Va., to Roanoke, Va. The association will maintain offices in the Pythian Building, 5 Franklin Road, SW.

● Tacoma City Council has been urged by C. A. Erdahl, public utilities commissioner, to approve installation of a 20,000-kw steam turbine generator at the city's No. 2 steam plant. The city's two steam plants now have a capacity of 40,000 kw. The council is expected to approve Erdahl's recommendation of the project, which could be completed by February 1954 at a cost of $2-million.

● Brazos River Transmission Electric Cooperative, Inc, has changed its name to Brazos Power Cooperative, Inc. No change was made in corporate structure, management, personnel, or policies.

● Illinois Power Co has received authority from Illinois Commerce Commission to build a generating station near Kickapoo State Park, nine miles northwest of Danville, Ill. Construction of the first unit, with a capacity of 75,000 kw, will begin this spring. It is expected to go on the line in the fall of 1954. A 100,000-kw unit will be added a year or two later. Provision will be made for further expansion of the plant.

● Pennsylvania Electric Co has purchased a 60-acre site on the west bank of the Allegheny River, four miles north of Kittanning, Pa., for a steam plant. The site was selected because of its proximity to water supply and coal reserves. The purchase was made as a result of engineering studies showing future need of additional capacity in the west central section of the company's system.



In the tabulating department the cards are punched, sent to the accounting office . . .

Punching Their Way Out of a Paper

Wisconsin Electric Power Co finds machine accounting speeds up work, increases efficiency, cuts costs, and provides better management control

There are only seven people doing the work today that formerly required 25 in the general accounting department of Wisconsin Electric Power Co. What's more, they're producing a larger volume of work and supplying more information to management and operating departments than ever before.

Company officials trace this progress to machine accounting methods instituted as new developments cropped up. In the words of L. M. LaPorte, vice president and controller:

"Without it we couldn't get enough people into this whole building to turn out the bills and payroll checks and produce financial reports in the short period we have between closing time and when financial statements must be completed."

The financial report speed is typical. Under old methods, material transactions, for example, were closed the 15th calendar day of the month and statements were not out until the 15th of the following month. Now transactions close the day before the fourth last working day of the month and statements are out the eighth working day of the following month.

Duplicate copies of mechanically prepared ledgers are now furnished to each operating department so that detailed results of operations for the previous month are available promptly in the department. Previously it was necessary for employees of the departments to inquire at the accounting department for reference to the only available copy of the hand-posted ledgers and analyze the charges posted to their accounts.

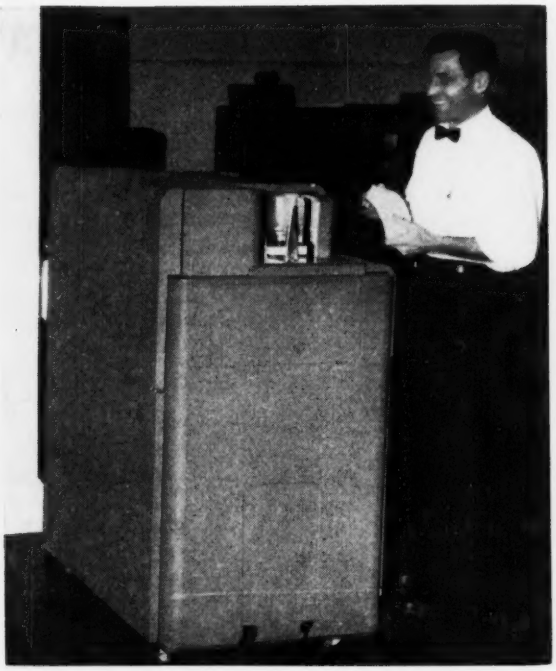
Aids Purchasing and Stores . . . Stock reports are supplied to the purchasing and stores departments during each month.

These show number and value of items in each lot number. An annual stock report lists all items not active since 1944 and those not operative during the last year. This assists the purchasing and stores departments in controlling the investment in materials and supplies and in disposing of inactive or obsolete materials. Complete information on inventory reconciliations and internal auditing is also readily available.

Another function performed automatically on the machines is cost comparison on purchased items. At the end of each month new average unit prices are computed for the items bought during the month. These are mechanically compared with previous average prices. In case of change in excess of accepted limits above or below previous average prices, the machine selects the tabulating card for the lot number and the price is checked.

This procedure has saved thousands of dollars by catching pricing errors by vendors.

Rate Studies Streamlined . . . Machine methods have also eased and speeded special analyses for rate studies. If a particular situation permits gathering of information over a fairly long period of time, analyses can be made



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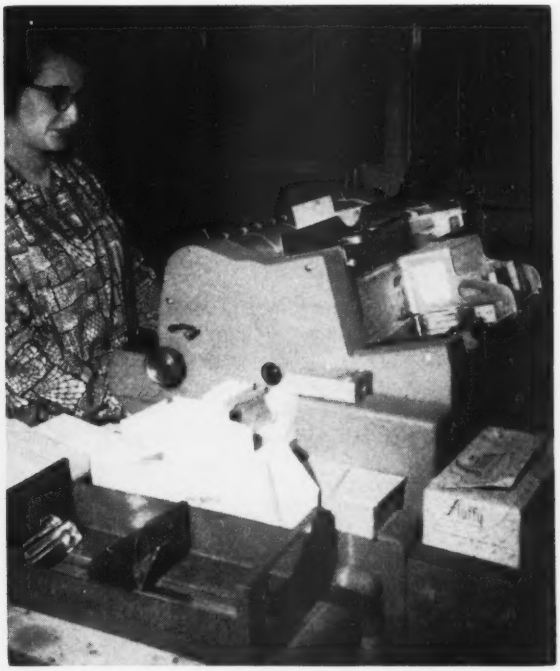


. . . for the customer's bill . . .

Snag

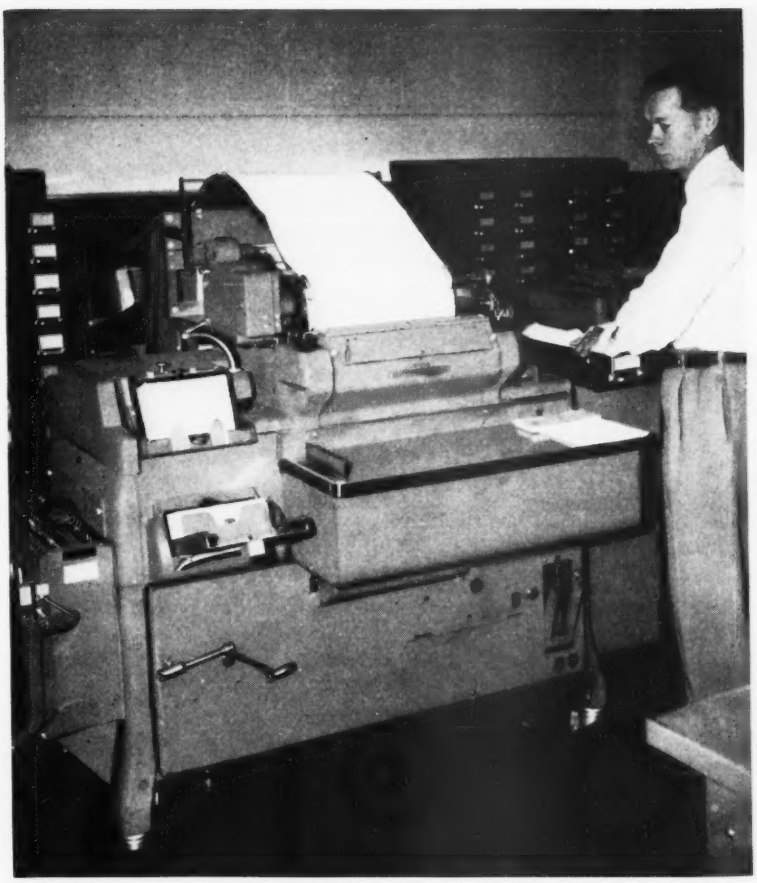
at little cost. Even special hurry-up jobs are reasonably priced.

During recent hearings on a rate case, information was gathered on the effect of different rates on the company's revenue. Information was compiled by location and by rates, making it possible to apply any combination of rates to determine what the company's receipts would be under a proposed rate structure. This proved invaluable in the subsequent hearings.

New Housing . . . Mechanization of more and more accounting procedures, together with increased volumes of work, has caused the accounting division to outgrow the bounds of its former quarters.

This year, therefore, new quarters were constructed which provide the most modern facilities, including air conditioning, fluorescent lighting, acoustically-treated ceilings and walls, and music.

Adequate space has been provided for future expansion. Most importantly, says Controller LaPorte: "The improved working conditions increase efficiency."



. . . to become part of the overall report

'53 Seen as Good Year for Appliances

ELECTRONIC RANGE put out by Westinghouse has controls which prevent burning of food

INDUSTRIAL TV SYSTEM was displayed by Kaye-Halbert at San Francisco Home Goods show

It's going to be a good year for most phases of the electrical appliance business. But competition for the consumer's dollar will be keener than ever, with other phases of the home furnishings industry working to get their share of sales. These are conclusions reached at the 74th Home Goods Market show held in San Francisco's Western Merchandise Mart Feb. 2-6.

Record-breaking attendance of well over 10,000 dealers and buyers, from the 11 western states, Alaska and the Hawaiian Islands, crowded into the show. Displays of electrical appliances covered two entire floors. George A. L'Amoreaux, the Mart's general manager, said at a press luncheon that manufacturers' supplies are ample and prices are holding firm. Dealer inventories generally are down with dealers in a receptive frame of mind to take on the very latest models and push them.

Big Demand in West . . . It was felt that where television is just entering an area, it will dominate in sales of appliances. But in areas where it is established, other appliances will move faster according to the particular region. Demand for home furnishings, including appliances, will be strong in the West because of the 1 million housing starts expected in 1953, about 200,000 of which will be begun in the 11 western states.

New Products Displayed . . . New appliances and a new, compact industrial television system made their public debut at the show. Bendix Home Appliances displayed its combination automatic washer and drier and Westinghouse Electric Corp showed its new electric range with an electronic control on surface units which prevents burning of food. Unit measures temperature of pan bottom and turns element off if water boils away and temperature rises.

Kaye-Halbert Corp, Culver City, Calif., introduced the "Cyclops" television camera and monitor system. Camera unit is about the size of a 16-mm camera and may be controlled at the monitor from as far away as 500 ft. Camera uses standard 16-mm lenses to give the user a choice ranging from wide angle to extreme telephoto lenses.

PROPER SEALING AND TERMINATING OF HIGH VOLTAGE CABLES IS IMPORTANT. IT PAYS TO USE G & W POTHEADS... THE STANDARD OF THE INDUSTRY SINCE 1905.

G & W ELECTRIC SPECIALTIES

POTHEADS

Protect cable ends against moisture and leakage of cable impregnating oil.

Provide permanent porcelain internal and external creepage of adequate length to withstand normal and surge voltages.

Insulating compound in potheads improves electrical strength.

One of the hundreds of sizes, types and shapes of G & W POTHEADS will exactly meet your installation requirements.

Send for bulletins for complete data and prices:

Bul. No. AA50—Soldered porcelain type.

Bul. No. AB51—Capnut and other types.

G & W "Forethought A52 explains the theory of Stress Relief Cones as used in potheads. Send for your copy, there is no obligation.

G & W ELECTRIC SPECIALTY CO.
7780 Dante Avenue, Chicago 19, Ill.

Cable Terminating, Connecting and Sectionalizing Devices
Representatives in principal cities of U. S. A.
In Canada—Powerlite Devices Ltd. Toronto and Montreal

UTILITY DATA SHOWS OUTSTANDING 99.94% PERFORMANCE RECORD FOR L-M VALVE TYPE LIGHTNING ARRESTERS

Six-year performance records of a large midwestern utility show that L-M valve type lightning arresters have an exceptionally good operating record. With a total of 41,175 service years, only 23 L-M arresters had Isolator* operations while in service—there was only one instance of radio interference from L-M arresters—and of 613 arresters brought into the shop for electrical testing, not one was found faulty.

Here are the records for the years 1945 through 1950.

Year	Arresters in Service	Isolator Operations in Service	Number Tested	Failed in Test
1945	3,286	5	0	0
1946	4,322	2	11	0
1947	6,020	2	137	0
1948	7,469	4	118	0
1949	8,686	3	186	0
1950	11,392	7	161	
Total Arrester Service Years	41,175	23	613	0

23 ÷ 41,175 = .056% failure rate

This substantiates the claims that L-M engineers have always been able to make—that L-M arresters give remarkable protection, excellent performance, and long life with unchanging characteristics.

Testing Greatly Simplified. The Pyrex® glass housing of L-M valve type arresters allows you to "test by sight." You don't have to make an electrical test of every single arrester. Just look at the spark gap—any irregularities can be detected by sight. If the Isolator* is intact you know the valve element is okay. That's all there is to it—if you use L-M Pyrex-housed valve type lightning arresters.

Get Complete Details. For complete information on L-M Lightning Arresters, and details of visual test methods, ask the L-M Field Engineer, or write Line Material Co., Milwaukee 1, Wis. (a McGraw Electric Company Division).

LM

LINE MATERIAL

Lightning Arresters

Complete Coordinated Equipment for Distribution Today

*L-M's "ISOLATOR," watchdog of arrester trouble, gives positive assurance against grounding feeders through damaged arresters, by disconnecting the ground lead from the arrester. (As shown in the operating company records above, in 41,175 arrester-years there were 23 Isolator operations, which provided this disconnecting service.)

L-M's NEW PID
5 KV 100 ampere
intermediate duty cutout.
Reflective markings easily seen from the ground identify the door and cutout. Doors are easily removed and replaced with a switch stick, for safety.
Cutout rating and date of manufacture sandblasted into side of box for permanent identification.
5000 V
100 A.
LM-52

L-M's New PID Cutout Provides Up To 166% Higher Interrupting Capacity At 20% Lower Cost

Costs 20% less than standard 100 ampere cutout; interrupting capacity 166% higher at 2.5 kv (8000 amperes), 66% higher at 5 kv (5000 amperes). Box will accept all standard 50 ampere doors, thus permitting one box to be used for both 50 and 100 ampere service. Also takes 200 ampere switch blade door.

L-M's PID Cutout is designed to provide a 100 ampere intermediate duty cutout at an appreciable saving over standard 100 ampere cutouts. Boxes are smaller and more compact than standard 100 ampere cutouts—they are the same size as a 50 ampere cutout but terminals and contacts are heavier. Thus the cutout will take any of L-M's 50 ampere doors, as well as the 100 ampere intermediate duty and 200 ampere switch blade door.

The non-disconnecting door provides positive link ejection and circuit interruption even on low current faults.

Both cutout and switch blade doors can be removed and replaced with standard switch sticks, providing additional safety.

Cutout and disconnect switch doors are easily identified from the ground by the reflecting markings on the doors. Rating and date of manufacture are sandblasted into sides of box for permanent identification.

Get Details on L-M Fuse Cutouts

L-M offers complete families of open and closed type cutouts to meet a wide range of requirements. Interchangeable doors offer low first cost and economical capacity increases as loads are increased. For complete information ask the L-M Field Engineer or write for bulletins. Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

LINE MATERIAL
fuse cutouts

103

Complete Coordinated Equipment for Distribution Today

Arkansas P&L's biennial dinner provides . . .

Food and Thought for the Legislators

This year at Arkansas Power & Light's fifth biennial legislative dinner, C. Hamilton Moses recommended the state put 1,250,000 idle acres of farmland back into production as a step towards speeding up economic development of Arkansas.

The proposal was one of a series the utility has offered to legislators and businessmen in Arkansas at these dinners over a ten-year period.

"Arkansas has to outplan, outthink, and outwork all the other states if we're to maintain the industrial growth pace we have set during the past decade," Moses told the 550 industrialists, legislators, educators, labor leaders, and civic figures who turned out for the affair in Little Rock.

Decade of Dinners . . . Back in 1943 Moses, then in his second year as the utility's president, decided that if AP&L, Arkansas' largest business, was to prosper, the state's whole economy would have to be improved first. He knew the company couldn't bring it off alone.

He got together a small group of leaders and told them Arkansas needed direction and a plan to lift itself from near the bottom of the economic ladder. To do the job, Moses said, would require the most workable and best organized program in the nation, sparked by business leadership and backed by state government.

The utility president knew that to get support from the state government, he would have to sell the lawmakers on the plan. A legislative dinner, he reasoned, was the place to do it. He invited Arkansas entire

POWER, LEGISLATIVE AND ELECTRICAL, was represented at AP&L's recent "Arkansas Plan" dinner. Left to right, Pres R. E. Ritchie, former Govs Homer M. Adkins and Ben Laney, Gov Francis Cherry, and C. Hamilton Moses, board chairman and sponsor of the event

BUSINESSMEN AND LEGISLATORS sat down to eat and talk over their problems at a common board. Left to right, Sam Vogel of Vogel Inc, frozen food concern; Chris Finkbeiner, Little Rock Packing Co; State Sens Ellis Fagan, James D. Johnson, and Lawrence Blackwell; and Rep M. R. Gilbert (back to camera)

General Assembly and presented his idea.

Subsequently the legislature created the Arkansas Resources and Development Commission to handle the state's part in the program and businessmen set up the Arkansas Economic Council as a statewide development organization. The two groups, with AP&L, became sponsors of a program called the "Arkansas Plan."

With that result, Moses considered the legislative dinner a success—four more have been held to date. AP&L picks up the check. Moses reports on state progress and recommends what should be done by the sponsors to improve the program.

Agricultural Tack . . . This year the board chairman pointed out that, because the state is predominantly agricultural, the "Plan" must be widened to put idle farm land to use to provide more farm employment and income. To back this up, he urged the legislators to enable the State University to engage in more agricultural research.

In addition, Moses asked the legislators to:

- Help take the "Plan" program to every community and county
- Help create a better atmosphere for business
- Find a way to provide adequate publicity and advertising for Arkansas.

"The objective," he noted, "is to keep Arkansas moving faster than the nation."

He said the decade the plan had been in effect had put the state ahead in all the basic factors that measure prosperity and living standards.

Arkansas has serious economic handicaps, Moses pointed out, but some advantages that overcome them. He listed these as:

- A fair attitude by state government and citizens toward business
- Natural resources, climate, and friendliness of people "unmatched in any other state"
- Plenty of room to locate plants, give workers better living conditions

More than 550 persons, including Gov Francis Cherry and two former governors, were on hand to mull over what Moses said. From the response, it looked as though AP&L would be sponsoring a sixth legislative dinner.

Nevada Shortage...

. . . may be solved through negotiation with Arizona agencies for firm and off-peak energy

Southern Nevada's critical power shortage appeared on the way to complete alleviation when the Nevada Colorado River Commission launched negotiations with Arizona agencies for firm and off-peak excess energy which may be available in as great a quantity as 926 million kwhr a year by 1956, according to recent estimates.

Gov Charles Russell, Nevada CRC chairman, announced following a meeting with Arizona officials Jan. 31 in Henderson, Nev., that an offer had been received from the Salt River Valley Power Users Association to sell the state of Nevada a large quantity of excess power beginning in the fall of this year.

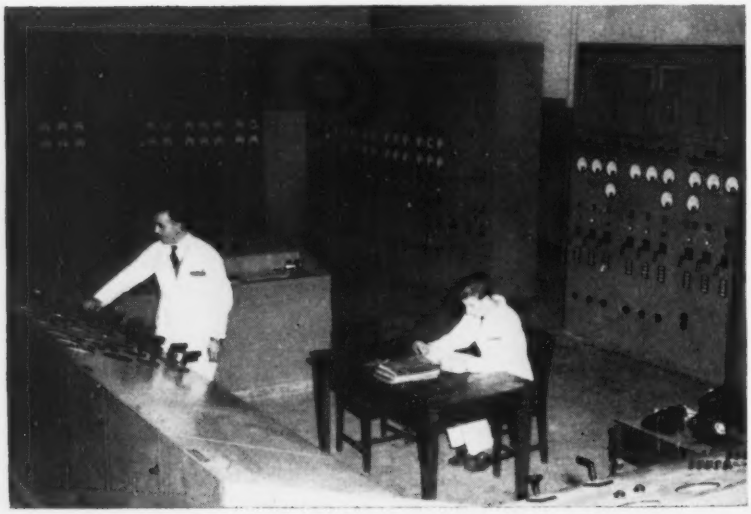
Legal Problem . . . The plan was submitted to the Arizona power authority group for approval and only one serious problem appeared: the legal question of whether the Arizona authority, over whose lines the power would have to be wheeled, has the right to transmit power generated in Arizona for sale outside the state.

E. A. Thomas, chairman of the authority, said he felt optimistic about the plan and thought it could be worked out.

Long-Term Contracts . . . The power would be sold by Arizona to the state of Nevada backed by long-term contracts to be financed by Nevada power users. Cost of the power to Nevada was estimated to be approximately 8.5 mills per kwhr at the Boulder Dam switchyard.

Salt River Valley Power Users' representatives said their association would be able to deliver 488 million kwhr in 1953, 524 million in 1954, 596 million in 1955 and 926 million in 1956, leveling off on that basis in the years following.

Governor Russell said this amount of power would just about take care of the shortage expected in southern Nevada during the next ten years, both for use at the Basic Magnesium plant in Henderson and for domestic and industrial consumption in southern Nevada counties where Boulder Dam energy now is being sold.



Control Room at New British Plant

Two engineers are busy at work in the main control room of British Electricity Authority's nearly completed Bankside Station in Southwark, London. The station will have four turbine-driven generators with a capacity of 240,000 kw.

Changes in Capacity Reported to FPC

PLANT ADDITIONS DURING OCTOBER

State	Utility	Plant	Fuel	Capacity (kw)
N. H.	Public Service Co of New Hampshire	Schiller	S	44,000
Mass.	Taunton Municipal Light Plant	Taunton	S	10,000
Pa.	Pennsylvania Power Co	New Castle	S	85,000
Ill.	Central Illinois Light Co	R. S. Wallace	S	60,000
Ill.	Jacksonville Light & Power Department	Jacksonville	IC	2,500
Minn.	Dairyland Power Cooperative	Twin Lakes	IC	2,500
Iowa	Northwestern Light & Power Co	Sibley	IC	1,136
Iowa	Iowa Electric Co	Fairfield	IC	1,000
Iowa	Grand Junction Municipal Light Department	Grand Junction	IC	394
S. D.	Northwestern Public Service Co	Armour	IC	2,500
Kans.	Municipal Electric Light & Water Department	Osawatomie	IC	1,250
Kans.	Kansas City Board of Public Utilities	Quindaro	S	30,000
Va.	Monongahela Power Co	Monterey	IC	240
W. Va.	Monongahela Power Co	Marlinton	IC	240
W. Va.	Potomac Light & Power Co	Albright	S	66,000
N. C.	Duke Power Co	Riverbend	S	100,000
N. C.	Carolina Power & Light Co.	Lumberton	S	62,500
Fla.	Clay Electric Cooperative, Inc	Plant 2	IC	2,300
Tenn.	Tennessee Valley Authority	Pickwick Land	H	36,000
Ala.	Tennessee Valley Authority	Widows Creek	S	112,500
Okla.	Grand River Dam Authority	Pensacola	H	14,200
Ariz.	Bureau of Reclamation	Hoover Dam Ariz.	H	85,500

PLANT RETIREMENTS DURING OCTOBER

R. I.	Narragansett Electric Co	Providence	S	3,600
Pa.	Lackawanna & Wyoming Valley Power Co.	Scranton	S	6,000
Ill.	Central Illinois Light Co	Dekalb	S	500
Ill.	Central Illinois Light Co	Liberty Street	S	5,000
Minn.	Worthington Municipal Public Utilities	Worthington	S	1,250
Minn.	Rural Cooperative Power Association	Maple Lake	IC	500
Iowa	Whiting Light & Power Plant	Whiting	IC	627
Mo.	Union Electric Co of Missouri	Mound	S	5,000
Kans.	Municipal Electric Light & Water Department	Osawatomie	IC	560
Kans.	Western Light & Telephone Co	Great Bend	IC	945
W. Va.	Monongahela Power Co	Sistersville	IC	200
Colo.	Public Service Co of Colorado	Lafayette	S	4,000
N. M.	Public Service Co of New Mexico	Water Street	S	2,500
Calif.	California Electric Power Co	San Bernardino	S	4,000,

H—Hydro, IC—Internal Combustion, S—Steam
United States Capacity as of November 1—Hydro, 19,797,811 kw; Internal Combustion 2,092,986 kw; Steam, 57,807,032 kw; Total, 79,697,829

Iowa Co-op Plans...

. . . to build transmission lines to out-of-state Bureau of Reclamation dams on upper Missouri River

Activation of the fourth power cooperative in the state of Iowa was carried further along last month as Lloyd Caulkins took the reins as manager of Northwest Iowa Power Cooperative. Setting up offices at the Lemars, Iowa, municipal airport, he immediately plunged into the details of arranging to bring power into the state from Bureau of Reclamation dams on the upper Missouri River.

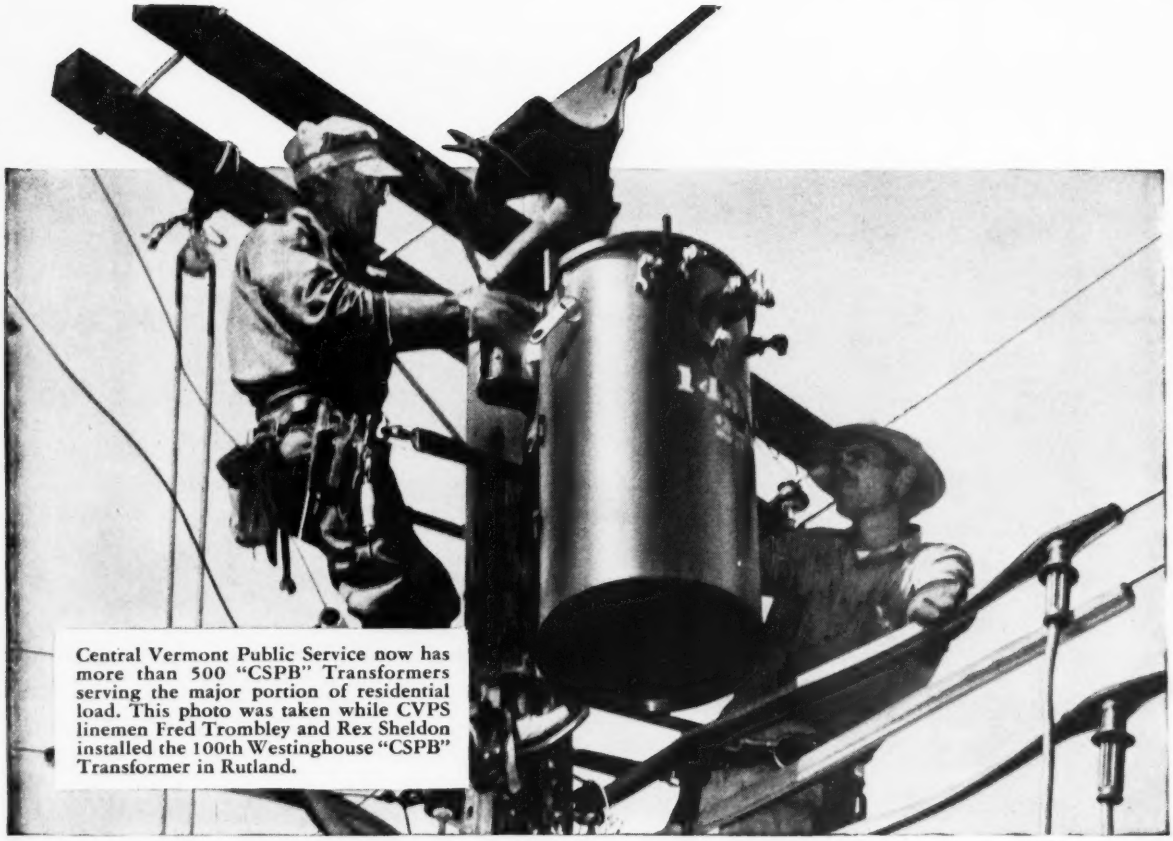
The co-op, formed by 12 distribution systems in 1949, received its first loan of $7,551,000 from the Rural Electrification Administration last summer. This, combined with a $503,000 loan to L. & O. Power Cooperative, brought authorized transmission construction from the dams into Iowa to nearly 700 miles of 69-kv line.

Co-op will be Absorbed . . . The L. & O. co-op, which will wheel its first power to members next year, was formed by Lyon and Osceola county distribution systems to transmit Reclamation power into the extreme northwest corner of the state. Its facilities will be absorbed by Northwest Iowa Power Co-op six months after the latter goes into operation sometime in 1955 or 1956.

Contracts for 200 miles of L. & O. construction — single and double frame—have already been let, and arrangements have been made to interconnect facilties with those of the Corn Belt Power Cooperative at Humboldt.

L. & O. transmission lines also will be extended northward to connect with Southwestern Minnesota Electric Cooperative at Pipestone, Minn., which heretofore has not had access to river power.

The 45-year-old Caulkins came to his Northwest job after two years as manager of the Sioux Valley Empire Electric Association at Colman, S. D. Before that he was with Bureau of Reclamation offices at Huron, S. D., had served as an electrical engineer at the atomic energy plant at Oak Ridge, Tenn, and from 1942 to 1944 was chief of utilities unit at Black Hills ordnance depot at Igloo, S. D.



Central Vermont Public Service now has more than 500 "CSPB" Transformers serving the major portion of residential load. This photo was taken while CVPS linemen Fred Trombley and Rex Sheldon installed the 100th Westinghouse "CSPB" Transformer in Rutland.

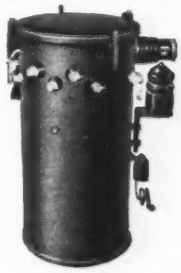
"CSPB®" Transformers take the heat off Rutland's load problem

Heavy loading of radial distribution made it necessary for Central Vermont Public Service to increase capacity at once. Future growth was certain.

They provided immediate capacity by banking with "CSPB" Transformers. Then, by simply changing to higher ratings, or adding more transformers, future growth could be handled economically.

For years, tying secondaries together has been recognized as providing the ultimate in transformer flexibility. But only with "CSPB" Transformers, first introduced by Westinghouse in 1946, can you eliminate the danger that sudden overloads or faults might cascade onto other transformers, and blank out the entire system. Here's why:

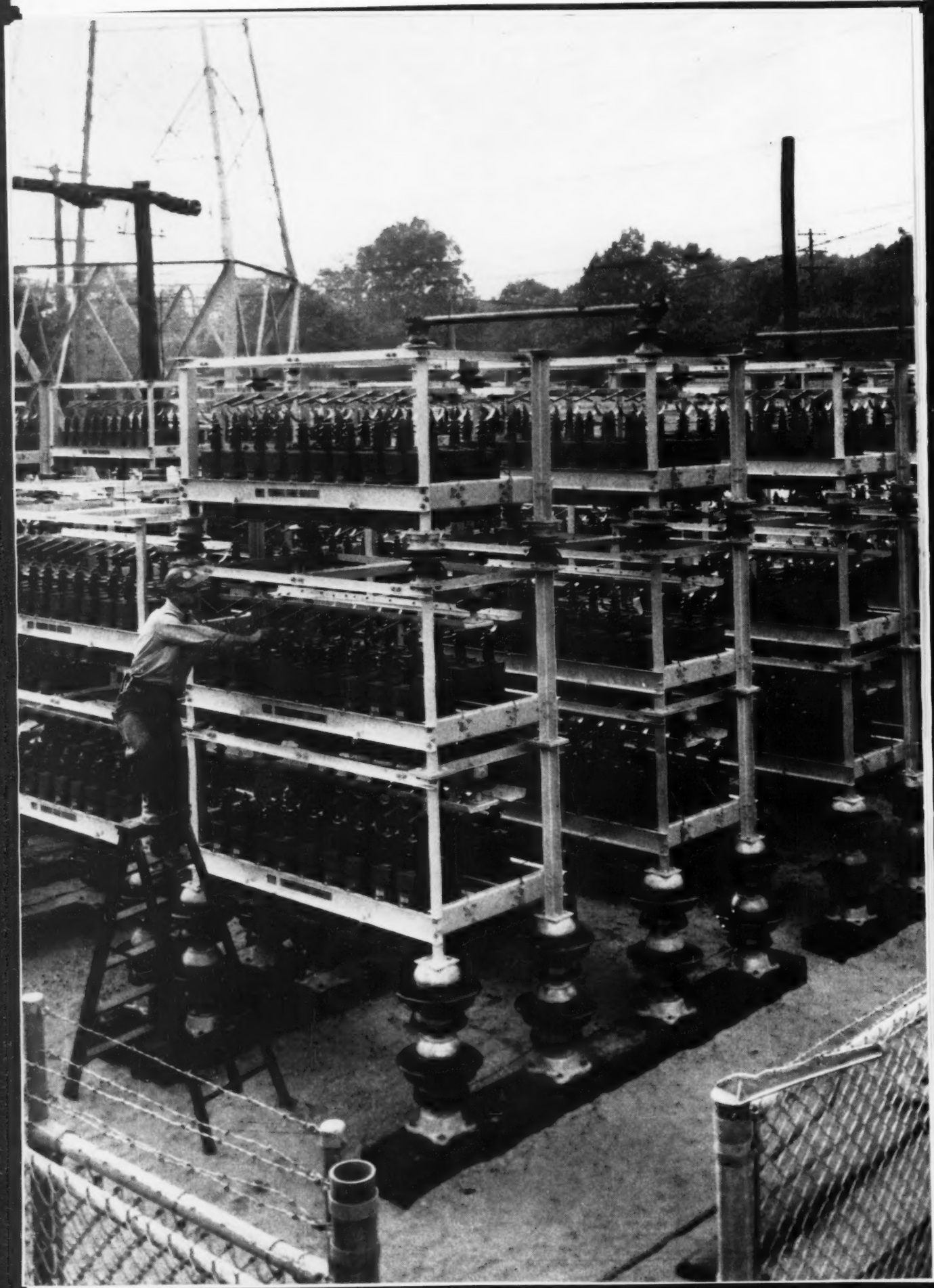
Two secondary breakers with warning signals function in each "CSPB" Transformer; one to serve each section of the secondaries. Secondaries are tied together only through the transformer. Therefore, "CSPB" Transformers first provide signal-light indication of a section operating at dangerous overload; then completely isolate severely overloaded or faulted sections...if that should become necessary to maintain service on the balance of the system.



Ask your Westinghouse representative for complete information, or write direct for Booklet B-4310A. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-70660-A

YOU CAN BE SURE...IF IT'S Westinghouse



Meeting the Nation's Growing Power Load

Releasing Kilovars for More Active Duty

Today, utility engineers are asking "At what point . . . do you do what . . . to get more kilovars?" Concern about the method of controlling the flow of kilovars to industrial and residential load is the natural result of generating and transforming increases all along the line.

The ability of capacitors to provide solutions to many kilovar load problems is only now becoming generally recognized. Aside from the positive advantages of improved voltage regulation, reduced I^2R losses and reduced operating costs, is the over-all fact that lines and equipment ahead of the capacitors are released for more load. Eliminating reactive amperes also means more efficient power station performance.

Making capacitor applications more practical and attractive are recent developments that have lowered relative costs. Indeed, the cost for all other means of supplying kilovars has increased far more than the cost of capacitors during the last four years.

The capacitor is not a spectacular or complicated piece of equipment as electrical equipment goes, but through the years Westinghouse has made steady improvement through constant research, development and experience. We could point to many development firsts for the capacitor. In this case, we believe that our greatest contribution has been the introduction of new methods of mounting and applying capacitors, which has made their application more convenient, economical and practical in obtaining over-all efficient system performance. This vast Westinghouse utility experience is being constantly applied to the solution of many other important utility problems. J-97170

YOU CAN BE SURE... IF IT'S

Westinghouse

Series capacitors quadrupled in size

About two years ago, the road block that had long stymied the use of series capacitors on high-voltage lines was removed. This was the development of a means for shunting excess current, during a short circuit, around the capacitors without removing them from the circuit, and thus losing their value during the critical transient period. This switching arrangement was applied to a 15,000-kva bank of series capacitors at Chehalis, Washington, substation on the 230-kva system of the Bonneville Power Administration.

With the way thus cleared, bigger —much bigger—series capacitors came into view. Early in 1952, an installation more than twice as big—for 46,000 kva—was made, also on the Bonneville system. By the year's end, another one, again almost double in size—85,000 kva—will be placed in service on the Bonneville Power Administration system.

Switching high-voltage shunt capacitor banks

The Indianapolis Power & Light Company recently installed on its system one of the first 34.5-kv capacitor banks in this country.

This capacitor bank, totaling 7290 kva, was part of a program of locating var generation close to var load in the most economical and practical manner. This installation demonstrated that high-voltage, shunt capacitor banks can be switched without exceeding 2.4 times normal phase-to-ground voltage on the bus, a value in the range produced by interruption of short circuit currents.

Capacitor switching phenomena

The toughest job you can put on a breaker is the switching of capacitors. For some time, Dr. Roswell C. Van Sickle has been conducting extensive tests in the Westinghouse High Power Laboratory to determine the phenomena of capacitor switching, the performance of "De-ion®" grid oil circuit breakers, plain-break oil circuit breakers, magnetic blast air circuit breakers, and compressed air circuit breakers. For the complete description of Capacitor Switching Phenomena, write for the AIEE Technical Paper on this subject prepared by Dr. R. C. Van Sickle and John Zaborszky . . . Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

Illustration on opposite page

Pictured here is the largest unit in this country of the 69,000-volt rack class. This Westinghouse capacitor application for the Long Island Lighting Company comprises 1005 units for a total of 25,125 kvar.

NEWS ABOUT PEOPLE

ERROL W. DOEBLER

EDWARD C. DUFFY

Doebler Is Appointed Head . . .

. . . of Long Island Lighting to succeed Barrett, who is the new board chairman. Duffy is named operating vice president

(Cover Story)

Errol W. Doebler has been elected president and chief executive officer of Long Island (N. Y.) Lighting Co. Doebler, formerly operating vice president, succeeds Edward F. Barrett, who was made chairman of the board.

Barrett will continue to take an active part in the formulation of company policies and will act as chairman of the committee which supervises the investment of employee pension funds.

Succeeds Doebler . . . Edward C. Duffy, formerly assistant vice president in charge of electric operations, was elected operating vice president to succeed Doebler.

Doebler started with Long Island Lighting in 1927 in its commercial department in Nassau County. After serving in that unit for ten years, he was then appointed to the position of general operating manager in charge of gas and electric operations, engineering and construction for the Long Island Lighting and gas operations for the Nassau and Suffolk Lighting Co and the Long Beach Gas Co. He served in that capacity until he was elected in 1941 a vice president of Long Island Lighting in charge of gas and electric operations, engineering, and construction.

Duffy has been associated with Long Island Lighting since 1942. He has held various positions of increasing responsibility associated with engineering and power production throughout the company system.

E. V. Huggins Is Named to Westinghouse Posts

E. V. Huggins has been elected to the newly created post of vice president of corporate affairs for Westinghouse Electric Corp.

Huggins was also elected president of Westinghouse Radio Stations, Inc. Joseph E. Baudino, general manager of all operations for the subsidiary, has been elected executive vice president in charge of all operations.

E. V. HUGGINS

Huggins, who was first affiliated with Westinghouse in 1943, has been for the past two years assistant secretary of the United States Air Force. He resigned as executive vice president of the Westinghouse Electric International Co to accept the Air Force assignment.

Southern Canada Power Appoints Page a VP

Southern Canada Power Co has elected J. A. Pagé vice president and director. He has been serving as general manager of the company since January of last year.

Pagé joined the utility in 1918 and was its first apprentice. He first worked in the meter department and then was assigned to the transformer department. In 1919 he was transferred to the Drummondville powerhouse, becoming system operator in 1920.

J. A. PAGE

Subsequently Pagé served as wireman in St. Johns, worked in the accounting department in Montreal, and then became successively manager at St. Cesaire, East Angus, Farnham, and St. Johns branch.

In 1948 Pagé was appointed assistant general manager of Southern Canada Power and four years later was named general manager.

•

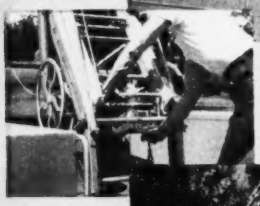
F. Maynard Reed has been named superintendent and **Erving L. Bussey** assistant superintendent of Pennsylvania Electric Co's newly created system economy department, which will be responsible for economical sched-

THIRTY FEET HIGH in THIRTY SECONDS

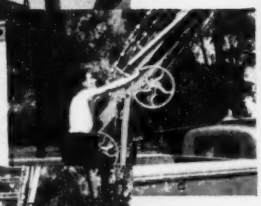
Simple, Easy, One-Man Operation

1. Ladder hold-down on cab roof is released.

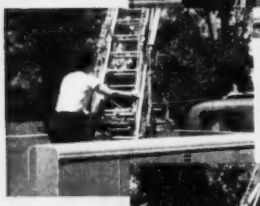
2. Pressure is applied to lower ladder rung.



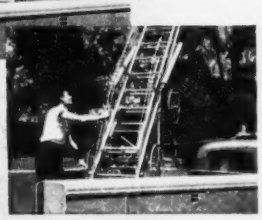
3. Ladder is locked in elevated position.



4. Upper section is extended to desired height.



5. Ladder is rotated to spotting position.



6. Incline of ladder is adjusted as required.

POWERS American SERIES 5510

REVOLVING AERIAL LADDER

Sounds unbelievable . . . but the *Powers-American* Aerial Ladder is so simple, so fast, and so easy to operate that it can be raised to a working position in only 30 seconds—by *one man!* This versatile ladder can be spotted in 40 positions throughout a 360° revolution . . . inclined to any angle from 30 to 75 degrees. Its curved platform falls into position automatically—to provide a level working surface. What's more, this ladder is so safe that it will support *five* times the normal working load. If your operation calls for overhead work, get all the facts on *Powers-American* Aerial Ladders. Mail the coupon NOW for complete information.

POWERS American DIVISION

PUBLIC UTILITY BODIES AND EQUIPMENT
McCABE-POWERS AUTO BODY COMPANY
HOME OFFICE: 5900 N. Broadway, St. Louis 15, Mo.
WESTERN OFFICE: Latham Square Building, Oakland 12, Calif.

CLIP THIS COUPON AND ATTACH TO YOUR LETTERHEAD

McCABE-POWERS AUTO BODY COMPANY • 5900 N. Broadway • St. Louis 15, Mo.

Please send me details on the following:

SERIES 5510 REVOLVING AERIAL LADDER ( ) 23' 6" ( ) 26' 6" ( ) 30' 6"

☐ Line Construction Bodies	☐ Wire Reels	☐ _____
☐ General Service Bodies	☐ Pole Trailers	☐ _____
☐ Light Duty Maintenance Bodies	☐ Hydraulic Towers	☐ _____

Name_____

Company_____

Address_____

City_____ Zone_____ State_____

Another DELTA-STAR First

330 Kv MK-40

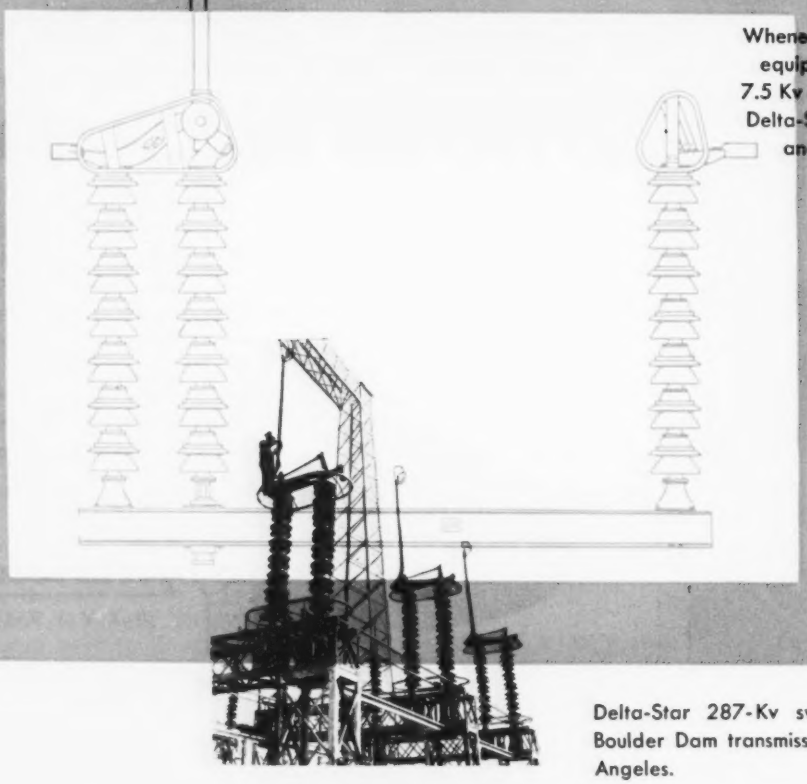
VERTICAL BREAK AIR SWITCH

For well past a quarter of a century Delta-Star has pioneered in the high voltage switching field. Through constant research and development they have consistently been first in the manufacture of super-high voltage switching equipment.

Today Delta-Star is engaged in the commercial manufacture of the first 330-Kv air switches to be sold in the U.S.A.

Like all Delta-Star "MK-40" switches they incorporate the latest and most refined improvements.

Whenever you need switching equipment whether it be for 7.5 Kv or super-high voltages, Delta-Star has the knowledge and facilities to provide you with the best the industry has to offer.



Delta-Star 287-Kv switches on the Boulder Dam transmission lines to Los Angeles.

WHEN YOU WANT THE BEST IN HIGH VOLTAGE SWITCHING EQUIPMENT SPECIFY DELTA-STAR

DELTA-STAR ELECTRIC DIVISION

H. K. PORTER COMPANY, INC.
2437 FULTON STREET, CHICAGO 12, ILLINOIS
DISTRICT OFFICES IN PRINCIPAL CITIES

uling of generating units and loading of transmission lines of 66-kv and over. With Penelec since 1928, Reed has served as assistant electrical engineer for the past eight years. Bussey, who came to Penelec in 1947, was named chief engineer of the Deep Creek Hydro station in 1951.

LYLE B. SCHUELER

Diamond Power Appoints Lyle B. Schueler a VP

Lyle B. Schueler, who has been sales manager of Diamond Power Specialty Corp, Lancaster, Ohio, since 1950, has been named vice president in charge of sales.

After graduating from the University of Wisconsin with a mechanical engineering degree in 1929, Schueler entered the field of steam-electric power equipment production and utilization. From 1940 to 1950 he was associated with American Gas & Electric Service Corp as assistant chief mechanical engineer with major responsibilities in design, construction, operation, and maintenance of all mechanical equipment of the system's properties.

•

Herman G. Steegman, formerly new business manager of Central Ohio Light & Power Co, has been named assistant industrial development consultant in the general office of Ohio Power Co. Before joining Central Ohio L&P in 1933, Steegman worked with Western Electric Co for six years.

Ralph W. Fackler, formerly superintendent of system operations for Indiana & Michigan Electric Co, has been named administrative assistant. **Edward S. Miller,** formerly assistant superintendent of system operations, was promoted to superintendent. Fackler joined the utility in 1934 and Miller started in 1922.

S. A. White, who has been operation supervisor for the Panhandle Division of Monongahela Power Co for the past six years, has been transferred to the Fairmont Division to serve as division engineer.

Carleton M. Holden has been named manager of the Champion Lamp Works, Lynn, Mass., commercial engineering department, of which he has been a member for several years.

Reorganizes Sales Unit

In line with expansion of production facilities, Anderson Brass Works, Inc, Birmingham, Ala., has reorganized its sales department into three specialized divisions under James L. Howarth, general sales manager. C. H. McWhirter as manager of utility sales will head the public utility division. B. E. Kidd as supervisor will direct the electrical equipment manufacturers' division. C. E. Bitzer is new manager of jobber and distributor division sales.

OBITUARY

Louis K. Doutrick

Louis K. Doutrick, 61, who retired last September as vice president of Arizona Public Service Co, died Jan. 28 at Phoenix. Doutrick, who was connected with the utility industry for 31 years, was a member of the Public Service board of directors at the time of his death.

Doutrick graduated from Kentucky State College in 1915 with a BS degree in electrical engineering. Following graduation from college he spent five years as an engineer with Westinghouse Electric Corp. He then went to Florida Power & Light Co, where he served for seven years as division engineer.

He joined in 1928 the Central Arizona Light & Power Co, a predecessor to Public Service. Starting as chief engineer, he advanced to vice president in 1939. He was elected to the board in 1948 and became vice president and general consultant two years later.

Doutrick was a member of the Pacific Coast Electrical Association, Pacific Coast Gas Association, and the American Institute of Electrical Engineers.

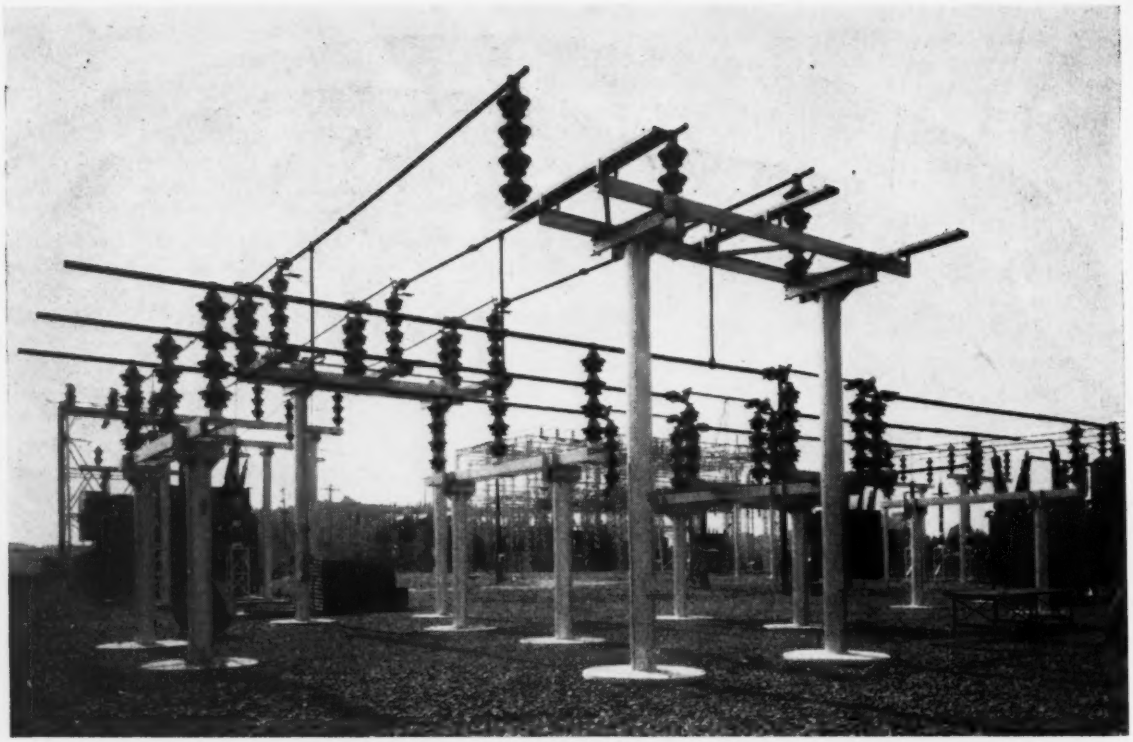
Ford Pennell, 43, vice president of Jasper Blackburn Corp, St. Louis, died Jan. 24. Pennell had been associated with the electrical equipment manufacturing firm since shortly after he graduated from Washington University in 1931.

Dan Earl Albertson, 54, safety engineer for Pennsylvania Power & Light Co, died recently at Hazelton, Pa. He started his utility career in 1922 with East Penn Electric Co, a predecessor company of PP&L. In 1926 he was made division distribution superintendent and in 1942 division superintendent of lines and substations, and in 1950 safety engineer.

Edward J. Cragg, 66, manager of the Nova Scotia Power Commission, Halifax, N. S., died there Jan. 22. Before being named manager of the commission in 1938, he was active in politics in Nova Scotia. He had served as mayor of Halifax and as a member of the provincial assembly.

George W. Biggs, Jr, 74, chief engineer of the American Water Works & Electric Co until his retirement in 1947, died Jan. 24 at New York.

Thomas N. Wynne, 63, a former executive of the Indianapolis Power & Light Co, died Jan. 30 at Indianapolis. Wynne had served as second vice president and chief mechanical engineer of Indianapolis Light & Heat Co, a predecessor company of Indianapolis P&L. He resigned from those posts in 1926.

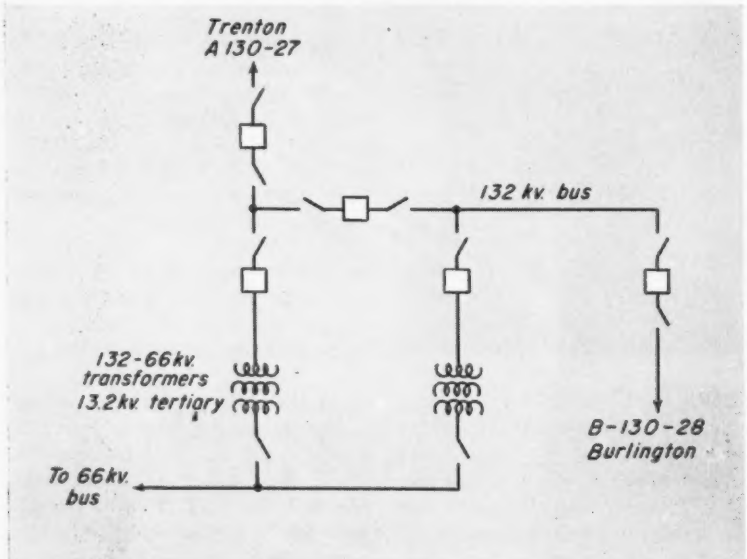


Simplicity marks Emilie Substation. Pipe columns and steel channels eliminate . . .

Simplified Substation Structure

Single-bus design, using large rolled steel sections and standard pipe, conserves critical materials, improves working clearances, and reduces painting outages

K. S. GARRETT, Engineer, Engineering Development Section, Philadelphia Electric Co

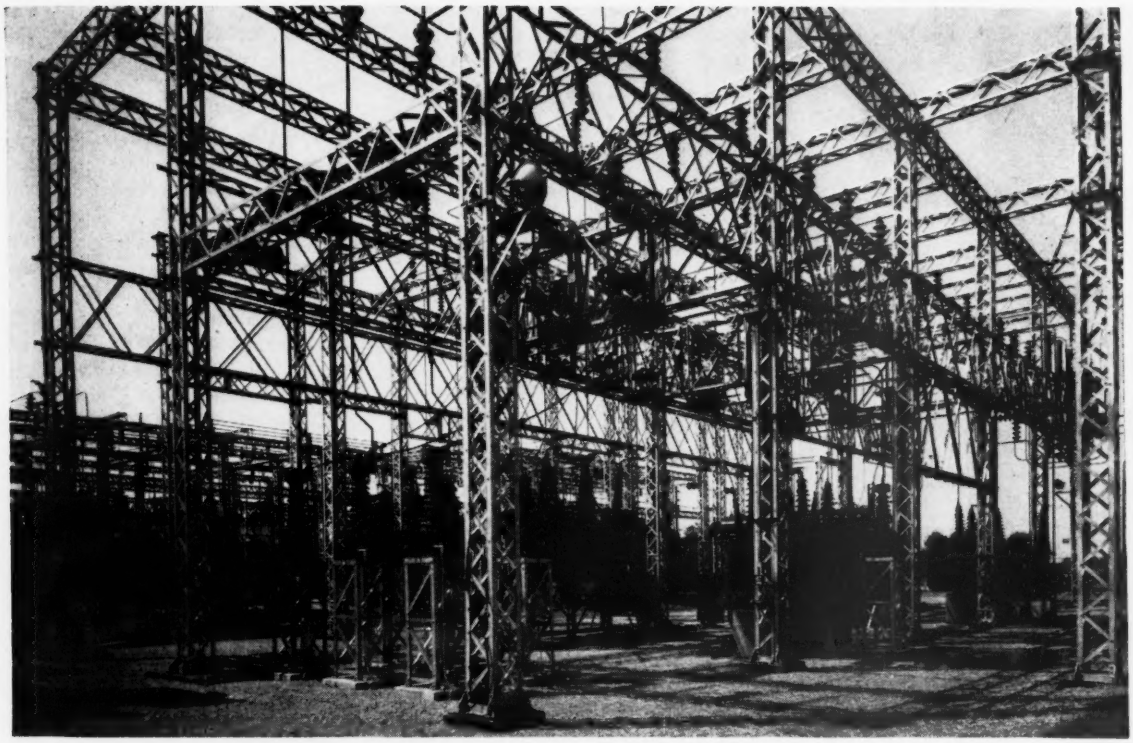


OPERATING DIAGRAM accentuates simplicity, provides high reliability coupled with low cost and maintenance. Space is provided for second line from each bus section.

Simplicity marks the new trend in Philadelphia Electric's outdoor high tension substations. The congested steel lattice structure long accepted as standard has given way to steel pipe columns and rolled steel channels.

The new design provides the high reliability, low construction cost, and reduced maintenance needed to meet today's requirements. The recent introduction of 132-kv transmission provided opportunity to try it out at Emilie Substation, a point of interconnection with Public Service Electric & Gas Co (New Jersey) near Trenton, N. J.

This station has a single straight 132-kv bus with two sections, each connected to a 50,000-kva three-phase 132-66-13.2-kv FOA transformer and one out-going 132-kv line. The bus is 3-in. copper tubing supported on 161-kv pedestal insulators. These insulators, and disconnect-switches for the bus-tie oil circuit breaker, are mounted



Congestion of conventional design

Saves Money and Outages

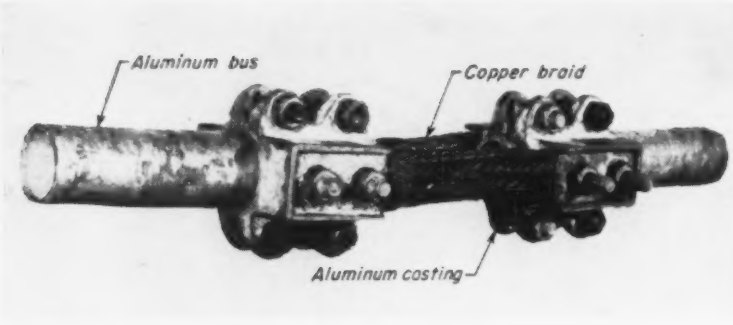
on steel channel assemblies supported by 12-in. standard pipe columns 10 ft high, set in concrete. Generous space was provided between the two bus sections to reduce the likelihood of a failure on one near the sectionalizing equipment affecting both buses. Taps to the two transformer breakers and to the two outgoing line breakers are of 2-in. tubing similarly supported on 19-ft columns.

Foremost among the requirements was adequate service reliability. The conventional design sought reliability in duplicate main buses or ring buses supported by high steel structures. Rarely has the simple single bus been considered acceptable. But a careful review of operating records disclosed few instances when the alternate bus had permitted faster restoration of service or great gain had accrued from a ring bus. More recently, dual feeds to customers, outside plant breakdown facilities, and tie lines have made it very unlikely that equipment failure in one substation could seriously affect service. Improved reliability of equipment and knowledge of its operation further reduce the justification for more than a single bus.

On the premise that a single bus would be adequate provided all equipment remained in service, the maintenance problem was studied. Fundamentally, elimination of equipment and structures reduces the amount of maintenance to be done by almost the same degree. Maintenance of the individual line or transformer equipment does not pose a serious problem. But outages involving the bus are objectionable if they must be frequent or prolonged. Maintenance of disconnecting switches, insulators, and conductors cannot be avoided, but they require less frequent attention today than they have in the past. Extended outages for painting the latticed steel supporting structure appeared to be the most objectionable feature of existing substations.

A review of outdoor substation design practices indicated that the latticed steel structure is widely accepted, largely because of its alleged economy of construction. Many utilities use galvanized members, but field welding destroys this protective covering and painting eventually is required. Trial installations showed that non-ferrous metals could be used when available in the proper sizes and shapes without excessive cost or complications. But it appeared that installations employing large rolled-steel sections most adequately satisfy requirements.

For supporting columns, where strength is required in all directions and torsional rigidity also is desirable, large pipes offer the greatest strength per pound of steel. The 12-in. pipe used at Emilie had a wall thickness of 0.375 in. and weighed 49.56 lb per foot. The columns are filled with concrete to seal the interior surface. Future installations may use smaller pipe for the shorter and lighter-loaded columns, giving additional savings. Flanges at the bottom will attach to bolts cast in the concrete. Simplification of the cross members at the base of the insulators in addition to complete elimination of all structure above the conductors and switches reduces outages for painting to a very satisfactory degree.



Tinned Cu Braid Joins Al Buses

Tinned copper braid may be the solution for flexible connections to join aluminum bus sections, claims A. E. Blanchard of Burndy Engineering Co. Recent laboratory tests conducted on expansion connectors for aluminum tubular bus indicate that good characteristics can be obtained.

The connection is made by bolting tinned copper flexible braids under pressure plates in pockets of aluminum castings, which are bolted to the bus. Penetrox A was applied to the connection to eliminate electrolytic action.

The illustrated connection was first subjected to nine cycles of 1,000-amp heating and then 55 cycles of 1,400-amp heating. Each cycle included 2½-hr of heating and 1½-hr of cooling. Test results show that the braids in all cases were cooler than the aluminum. Resistance measurements, taken during the 64 cycles, varied from 27.01 to 27.50 microhms.

Next, the connection was subjected to salt spray for 200 hr. Initially, the resistance was 28.26 microhms. After 100 hr, the measured resistance was 27.90 microhms; following the 200-hr period, the resistance measured 30.20 microhms, and there was no evidence of electrolytic corrosion or damage to the aluminum casting.

Power for Microwave System

. . . must be very reliable and permit quick changeover without voltage loss to vital links such as protective relaying

F. C. KRINGS,* Electric Utility Engineering Dept, General Electric Co, Schenectady, N. Y.

Although loss of a voice or telemetering channel would not be too serious, most utilities cannot tolerate the loss of all communication at the same time. The multi-channel nature of microwaves necessitates a high degree of power supply reliability. Because existing equipments require high plant voltages, station batteries are impracticable, and the supply must be an ac source.

Further, operating services such as supervisory control, telemetering, load control, the dispatching voice channels, and protective relaying must have an ac source that is available during outages, emergencies, and system disturbances. For general office communication and for controls that can tolerate a short change-over outage of 30-60 seconds, a gas-driven generator of the automatic emergency throwover type is adequate. But protective relaying should have no unplanned outages and must be available during faults.

For protective relaying over microwave, the most desirable power supply is the three-unit, motor-generator set consisting of an ac motor, an ac generator, and a dc motor, all direct-coupled. The ac motor drives the generator from the station service except in emergencies, when the dc motor takes over. Sufficient flywheel effect is provided to insure adequate output during throwover. There is no dead time in the ac supply to the microwave. The dc motor is battery driven, giving the system the reliability obtained from a station battery. For long outages, a gas-driven charger can keep up the battery.

Current equipment will operate on 117v ± 5%, at frequencies 50-60 cps. This permissible voltage tolerance should be used when considering the voltage regulation of the power supply, rather than requiring the motor-generator set to have close voltage regulation. Since microwave equipment has a constant value of load, voltage regulation is needed only for the change in output voltage from cold to hot conditions in the generator.

Other Solutions . . . High-voltage batteries, used by Bell Telephone, provide good dependability but are not considered economical for most utility companies. A battery voltage of 375 to 550 would be needed for present microwave equipment.

A two-unit dc motor ac generator drawing from a standard station battery loads the battery charger heavily and continuously. Further, battery voltage variation between 105 and 140v presents problems of speed control.

A two-unit ac motor, ac generator with throwover to a gas-driven generator requires no batteries and is attractive for remote repeater locations. Sufficient flywheel action is needed to sustain voltage one to two seconds to cover the initial fault detection, plus the subsequent reclosing and second fault detection if necessary. However, protective relaying may not be present if two faults occur, one taking out the ac supply and the other occurring during the dead throwover time.

Another Possible Solution . . . Using an m-g set with a flywheel for more WR^2 would give sufficient energy for the starting of a fast-starting, gas-driven generator. With a throwover in the ac motor supply this would eliminate the dead throwover time. But the necessary flywheel might be very large.

Using a vibrator battery supply during the throwover to gas-driven generator still leaves 0.1 to 0.05 second dead time. This may occur just when protective relaying is necessary.

It can be seen then that adequate reliability for microwave protective relaying is best supplied by the three-unit set first described, while the gas-driven generator is suitable for most other services.

*From a paper presented at Communications Committee Meeting, Pennsylvania Electric Association, Syracuse, N. Y., Nov. 7, 1952

New Commission?

Washington's Governor Langlie indicates he may activate power body authorized in 1949

Gov Arthur B. Langlie of Washington state has indicated he may seek to "improve the authority" of a state power commission authorized by the 1949 state legislature but which he never activated.

"I never have been anxious to put the state in the power business," he declared, "but when you get problems which cross county lines, state boundaries and into federal agencies, something must be done."

A bill authorizing creation of a strengthened commission was introduced last week in the Washington legislature. The five-man body would include a representative of the PUD's, one representative each of the municipalities of Seattle and Tacoma (each of which has a city light department) and two members to be named by the governor, presumably to represent private power.

Langlie said he had encountered no opposition to the bill from various utility agencies with whom he had discussed it. He described it as allowing "a maximum of local level authority" and permitting "the only real opportunity we have to get out of hock to the federal government."

In the event of an inter-state compact to take over the Columbia River dams now operated by the federal government, the state power commission would be Washington's representative, backers of such a compact have suggested. It would have power to construct new generating facilities.

Langlie explained that he had wanted the previous power commission legislation merely for "stand-by purposes" but that new concepts of power responsibilities and new conflicts are arising "which may hamper further advances" unless a strengthened commission is authorized.

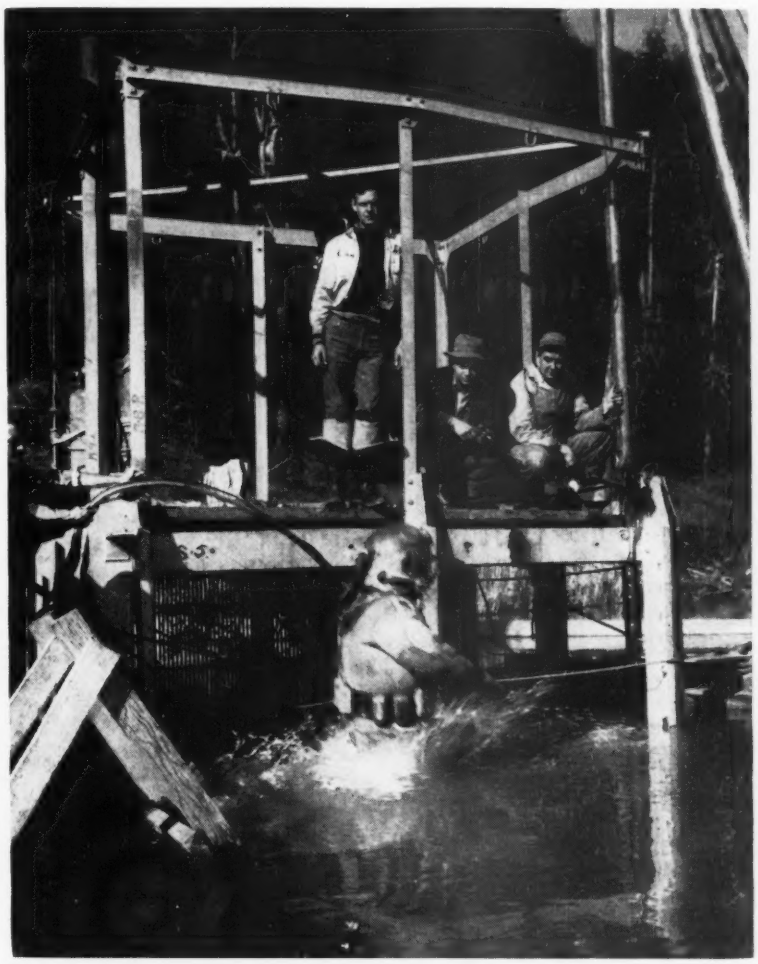
His Democratic opponents in the Nov. 4 election criticized him for not activating the commission, in the light of a recurring power shortage.

Seven-Utility Analyzer

Seven power companies in Pennsylvania, New Jersey, and Delaware have contracted with The Franklin Institute, Philadelphia, for the installation of an ac network analyzer at the Institute's research laboratories.

The $400,000 analyzer is being built by Westinghouse Electric Corp and will be utilized by Atlantic City Electric Co, Delaware Power & Light Co, Jersey Central Power & Light Co, Metropolitan Edison Co, New Jersey Power & Light Co, Pennsylvania Electric Co, and Philadelphia Electric Co. The analyzer will be placed in operation in mid-1954. The utilities have agreed that if they do not require all the time they are alloted, the device will be put at the disposal of other utilities.

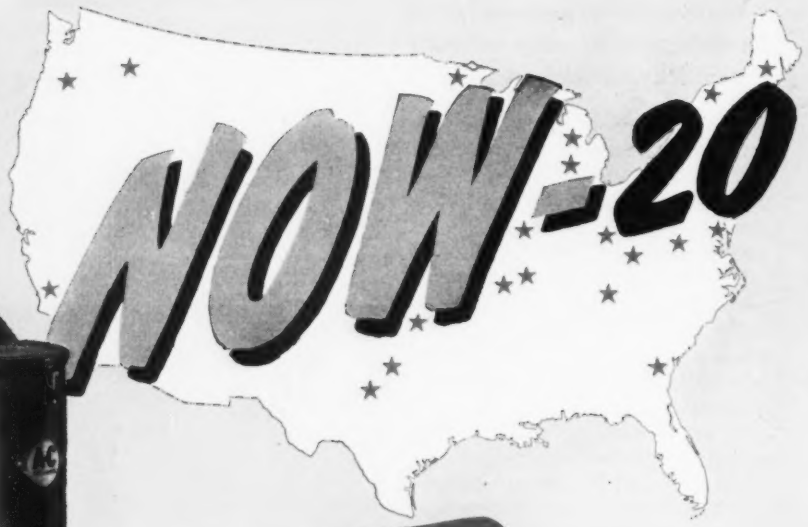
Consisting of 580 circuits and hundreds of relays, the analyzer can be set up to simulate a power system comprising as many as 28 generating stations, 270 transmission lines, 90 large blocks of load, 50 tap-changing transformers, 18 one-to-one ration transformers, and 90 capacitors.



Diver at Work High in the Mountains

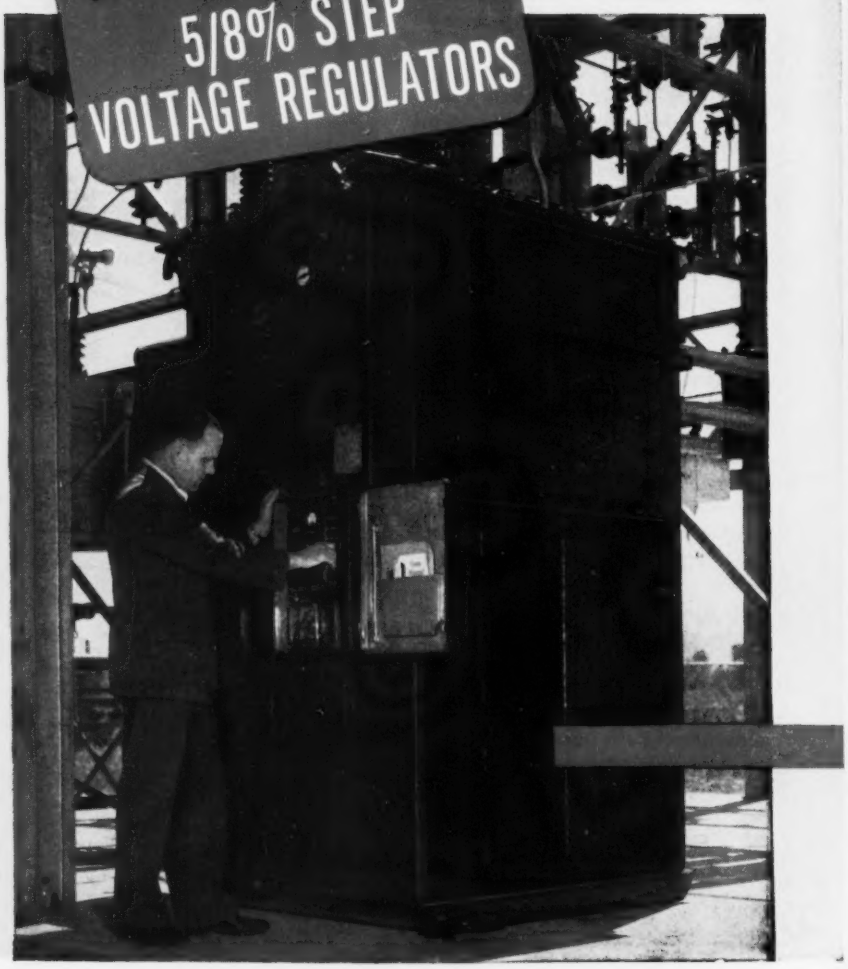
One of two divers hired by Pacific Gas & Electric Co submerges on his way to repair a mountain tunnel intake serving the company's Potter Valley Powerhouse. Late January storm waters swept debris into the intake clogging the "grizzly" and collapsing the intake framework. The company decided to engage the divers to make repairs rather than drain the reservoir and waste hydro storage.

Eel River flood debris lodged against the grizzly back of Van Arsdale Dam in Mendocina County, first stopping the water's flow into the tunnel, then collapsing the framework. Debris that rushed into the 5 x 7-ft tunnel jammed wicket gates in the powerhouse on the other side of the mountain. The plant has a capacity of 9,200 kw.



ALLIS-CHALMERS

5/8% STEP VOLTAGE REGULATORS



You get all the following 32-step type advantages at low cost. Allis-Chalmers distribution regulators offer great new possibilities in bringing accurate voltage regulation to a wide variety of applications. In this low-cost, flexible regulator you get all the advantages of 32-step regulation: a narrow ±1 volt band, 20% range of regulation, long life contacts, the *Feather-Touch* control feature, and unit construction to assure high quality workmanship plus long, trouble-free service.

Ratings available are:
7620 Volts—15, 50, 100 amp
5000 Volts—50, 100 amp
2500 Volts—100, 200 amp

STOCKING POINTS

Speed Allis-Chalmers Regulator Delivery

New program offers faster solution for voltage problems with 5/8% step voltage regulators

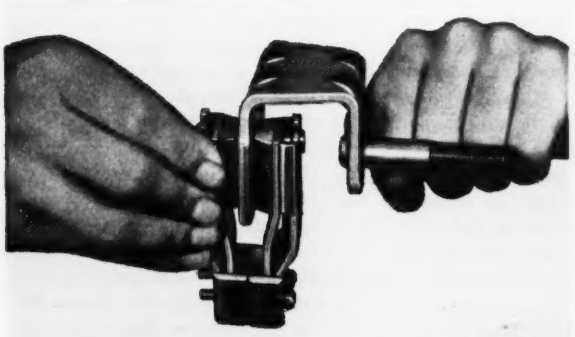
Now, faster than ever before, you can bring the advantages of Allis-Chalmers 5/8% step regulators to your system. Stocks of power and distribution regulators at 20 strategic points throughout the country assure an immediate answer to your voltage problems.

You can eliminate complaints due to low voltage immediately. No more headaches from service calls—A-C 5/8% step voltage regulators give you close, accurate regulation backed by 20 years of 5/8% step regulator experience.

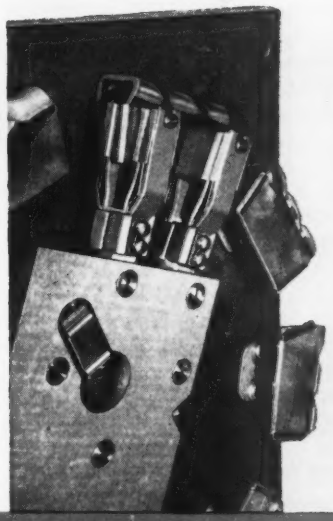
You can correct voltage at low cost without waiting for new construction. If you use Allis-Chalmers distribution regulators you'll have a handy tool for correcting poor voltage elsewhere after new copper is installed. You can shift these units to other lines easily because they are so easy to install.

You can increase profits as soon as you discover that poor voltage is cutting into your revenue. Allis-Chalmers 5/8% step regulators give a narrow ±1 volt band over 20% operating range.

For complete information, call your nearest A-C district office or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-3931



NO CONTACT WORRIES — you can't pull these contacts apart. One reason they stand up under life tests equivalent to 40 years of normal operation is spring pressure. You get long life without sacrificing tap-changing force or cushioning effect. Other reasons are arc-resistant material plus large, oversize dimensions.



TAP-CHANGING MECHANISM of Allis-Chalmers 5/8% step regulators is designed for simplicity, built for rugged operation. There are only three main mechanical bearings; many parts are combined. Result: life tests show this mechanism will stand up under 5,000,000 operations—equivalent to 100 years of operation.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Originators of 5/8% Step Regulation

DISPLAY LIGHTING exhibit shows increased effectiveness of special displays when lighting and color is properly employed. Wall and floor cases and special displays permit demonstration of numerous effects

SHADOWS DEMONSTRATIONS of exhibit are explained to customer by one of the power company representatives. During the first three weeks, 617 persons came in to see the Planned Lighting exhibit.

Light, Color, and Shadow Stressed in

JOHN D. HAVERKAMP, Commercial Supervisor, New Orleans Public Service Inc

A "Panorama of Light" exhibit located on the first floor in the sales area of New Orleans Public Service Inc., has met with such gratifying customer and public response, that it is planned to keep it in operation for an indefinite period.

Its effectiveness in demonstrating the principles of planned lighting and in developing interest was quickly proven. During the first week, company field representatives on duty personally conducted through the exhibit 55 industrial and commercial customers, 194 residential customers, and 136 company employees.

While viewing the exhibit, three of the commercial customers requested lighting layouts for their own places of business. One of these customers, a few days later, purchased new shielded fluorescent fixtures while the other two customers have not as yet completed their negotiations with their electrical contractors.

During the next two weeks 34 industrial and commercial customers, 159 residential customers, and 39 company employees were escorted through the exhibit.

Thus, a total of 617 persons viewed the exhibit during the first three weeks and came away enthusiastic and better informed about the value of planned lighting. Inasmuch as the exhibit purposely was opened with little publicity, the public's response during regular business hours was very satisfactory.

Two days after the public opening, the I. E. S. conducted a night meeting at the exhibit to which were invited architects, consulting engineers, and school board officials. After having dinner at a nearby hotel, the exhibit was viewed by 40 architects, engineers and school board members and 45 I. E. S. members.

This meeting was a success in getting across the story of planned lighting and in permitting the offer of planned lighting services and the use of the exhibit to those in attendance.

The objectives in opening the exhibit are as follows:

1. To have available a graphic demonstration of planned lighting for use by company field representatives. The men are encouraged to bring their customers and contractors into the exhibit to visually prove their sales presentation on the proper quantity and quality of lighting.

2. To have available visual proof of the planned lighting story for use with their clients by architects, consulting engineers, and contractors. The first night meeting was a step in this direction. Other meetings with groups of contractors are planned.

3. To have an educational exhibit for use by school groups. As a starter a tour of the exhibit with the senior architect class in a local university is planned.

4. To have available an easily understood demonstration on the need for, and value of planned lighting in the home.

5. To provide simple demonstrations of the principles of lighting for the education of the general public. The exhibit is located on the first floor in the sales area where traffic is heaviest. Those stopping in the exhibit are encouraged to operate the various demonstrations themselves. The man on duty, of course, explains the lighting principle demonstrated, answers any questions, and tries to get the viewer's consent to giving specific lighting recommendations for the home, office, store or factory, as the case may be.

The exhibit occupies a floor area of about 18 by 18 ft and is located just to the side of the main entrance doors.

In the entrance to the exhibit, is a five-sided display briefly giving the planned lighting advantages in the school, home, office, store and factory. On top of this display is a lighted revolving sign showing the name of the exhibit, "Panorama of Light."

The exhibit consists of 20 separate

COLLEGE STUDENTS, also groups of engineers, architects, school board members, industrial and commercial customers, as well as company employees receive demonstrations in lighting principles

PLANNED LIGHTING is discussed at Lighting Exhibit by R. C. Paslay (right), Chairman of Local IES Section with C. P. Besse (left), School Board member and Charles Colbert, School Board Supervising Architect

Sales Boosting New Orleans Exhibit

demonstrations as follows:

1. *Shadows.* Shows how harsh shadows on a printed page, caused by direct rays of light, may be eliminated through the use of diffused lighting.

2. *Shadows.* Shows how harsh shadows from direct rays of light make writing difficult. Then shows how such shadows are practically removed when well diffused lighting is used.

3. *Shadows.* Shows how shadows from direct rays of light may be used to advantage for display purposes. Man's head looks more lifelike when direct light rays are used as compared to diffused lighting.

4. *Shadows.* Similar to #3 but shows a coffee urn display.

5. *Quantity.* Rheostat permits varying amount of light from 0 to 500 ft-c. Customer turns the rheostat knob to choose the amount of light he wants for reading the printed page on display. Removal of the printed page exposes the electric cell and the light meter shows the amount of light chosen. This display is invaluable in proving the reasonableness of lighting recommendations of 50 ft-c upward

6. *Contrast and Brightness.* Shows how details of black thread on black cloth become more visible when the amount of illumination is increased.

7. *Contrast and Brightness.* Compares the relative visibility of white letter A on a white background to a similar white letter A on a black background. Both the position of the letter and the amount of light may be changed by the person viewing this exhibit.

8. *Time.* A revolving wheel with black and red spokes seems to slow when additional light is used. The light is arranged on an on-and-off cycle while the wheel continuously revolves at a constant speed.

9. *Brightness.* Two identically colored cubicles are lighted to different amounts of illumination with surprising results as to the apparent color of the walls of the cubicles.

10. *Size.* Varying size of letter on a background which varies from white to black, are viewed under increasing amounts of light. The greater ease of vision with the larger amount of light is shown. (The Luckiesh-Moss visibility card is used in the exhibit).

11-15. *Color.* The same colors, blue, green, and red are viewed under each of the following light sources.

1. Soft white fluorescent
2. Deluxe warm white fluorescent
3. Standard cool white fluorescent
4. Deluxe cool white fluorescent
5. Incandescent

Demonstrated is the principle that the color one sees depends on the color of the light reflected from the material. Feminine customers particularly like this exhibit.

16. *Proof.* A display-board shows photographs of actual local planned lighting installations. Each sheet on the board includes:

1. A photo of the installation.
2. A statement of what the lighting was designed to accomplish.
3. A brief statement of what was installed.
4. The customer's own testimonial on his experience after using the lighting installation.

17. *Display Lighting.* A battery of eight switches enables demonstration of practically all kinds of wall case display lighting.

18. *Display Lighting.* Another exhibit on the increased effectiveness of special displays when lighting including color is employed properly. A battery of nine switches controls the lighting and permits the demonstration of numerous different lighting effects.

19. *Display Lighting.* Shows the enhanced appearance of a floor display case when lighting is employed.

20. *Overhead Lighting.* The overhead area of the exhibit space is used to demonstrate the various types of fluorescent and incandescent lighting. The fixtures used are operated by low voltage switches. They are supplied by lighting allies, on a loan basis and are changed periodically.

The only publicity used in opening the exhibit was a notice in the company publications—"Riders Digest" and "Profit."

Trained Aides Are Needed . . .

. . . to free engineers from paperwork, Titus LeClair tells College-Industry Conference at Northwestern University

One way to beat the engineer shortage is to train and use skilled assistants, some 300 top-level industrialists and technical educators were told at the Fifth College-Industry Conference held in Technological Institute at Northwestern University, Evanston, Ill., recently.

Titus G. LeClair, manager of engineering for Commonwealth Edison Co and Public Service Co of Illinois stated that requiring an engineer to handle all the details of his job is "our greatest source of wasted engineering talent."

Relieve Engineer of Paperwork . . . The obvious answer to this problem he said, is to relieve the engineer of his paperwork and other non-technical activities by giving him the help of a technical assistant, draftsman, clerk, or perhaps all three.

He told the engineers and educators that "the technical assistant might be a technical institute graduate or have one or two years of college. With this type of skilled assistant, he pointed out, the engineer is able to do the engineering without going on to do the 'red tape.' Consequently the 'scarce' engineer can turn to other assignments quicker."

Get Dependable Technicians . . . Appealing to employers to alter their organizations to absorb this type of technician, LeClair asserted the graduate engineer can increase his working effectiveness at least 10 to 15% if surrounded by dependable technicians who readily grasp his form of communication.

"Not only can engineers work more effectively," LeClair declared, "but they are better satisfied when they feel their technical skills are being usefully employed, and that opportunities for advancement are better."

By the same token, he said, the technical assistant or clerk who didn't have the opportunity to get a college education is happy to have the chance to work with the engineer who can help him further his training in work of his liking.

LeClair Gets Support . . . LeClair's stand was echoed later by E. W. Seeger, vice president of Cutler-Hammer, Inc, Milwaukee, and Prof Kurt F. Wendt of University of Wisconsin.

Seeger, speaking from the viewpoint of the registered professional engineer, said that the "best immediate solution for the engineering shortage is better utilization of engineers presently available."

But he cautioned that if the number of engineering aides, assistants, and technicians is materially increased "we should be certain that these people are properly classified so the progress made so far in the recognition of engineering as a profession is not lost."

Wendt, speaking as a member of a panel on "Education and Training," said that the whole field of technical training should be "substantially expanded" and that "if we can encourage more young men to prepare themselves, in two years, for positions in industry which do not require nearly the amount of training expected of engineering students, we can increase our technical forces and use our supply of engineers more effectively."

'53 Bargaining Program Is Announced by IUE

James B. Carey, president of the CIO International Union of Electrical Workers has made public a bargaining program for 1953 which he predicted will be the "best year in history."

He said it was "the first time in history that a union is making public its collective bargaining program" in advance of actual negotiations.

The wage demands, he pointed out will be based on:

1. An increase to offset any increase in the cost of living since the last contract signing.
2. An increase to match the expanding productivity in the industry.
3. An increase to wipe out "lots of inequities" in present wage scales.

Other demands in the union's program will be:

1. A new pension system under which employees would not have to make contributions from their wages.
2. Profit-sharing plans, to be worked out by joint management-union committees on the local level.
3. A "complete insurance and health program to provide sufficient life insurance, sickness and accident disability to protect the workers."
4. The union shop in all plants.

Wage Increases Granted by Consolidated Edison

After 15 weeks of negotiations, an agreement providing wage increases and improvements in the retirement plan has been reached between Consolidated Edison Co of New York and the Utility Workers Union of America, CIO. The agreement will provide some 25,000 employees with new benefits amounting to about $10 million annually.

Wage increases for union-eligible employees will average 13¢ an hour. This includes a general increase of 8¢ an hour and 5¢ in semi-annual raises through an existing progression plan which is being extended.

An innovation in the company's retirement plan is provision for widow's benefits to be paid to the survivor of an employee, who might have availed himself of optional early retirement. This feature is believed to be unique in the public utility industry, the company announced.

The early retirement option itself was liberalized so as to be available to employees 50 years old or more and with 30 years with the company.

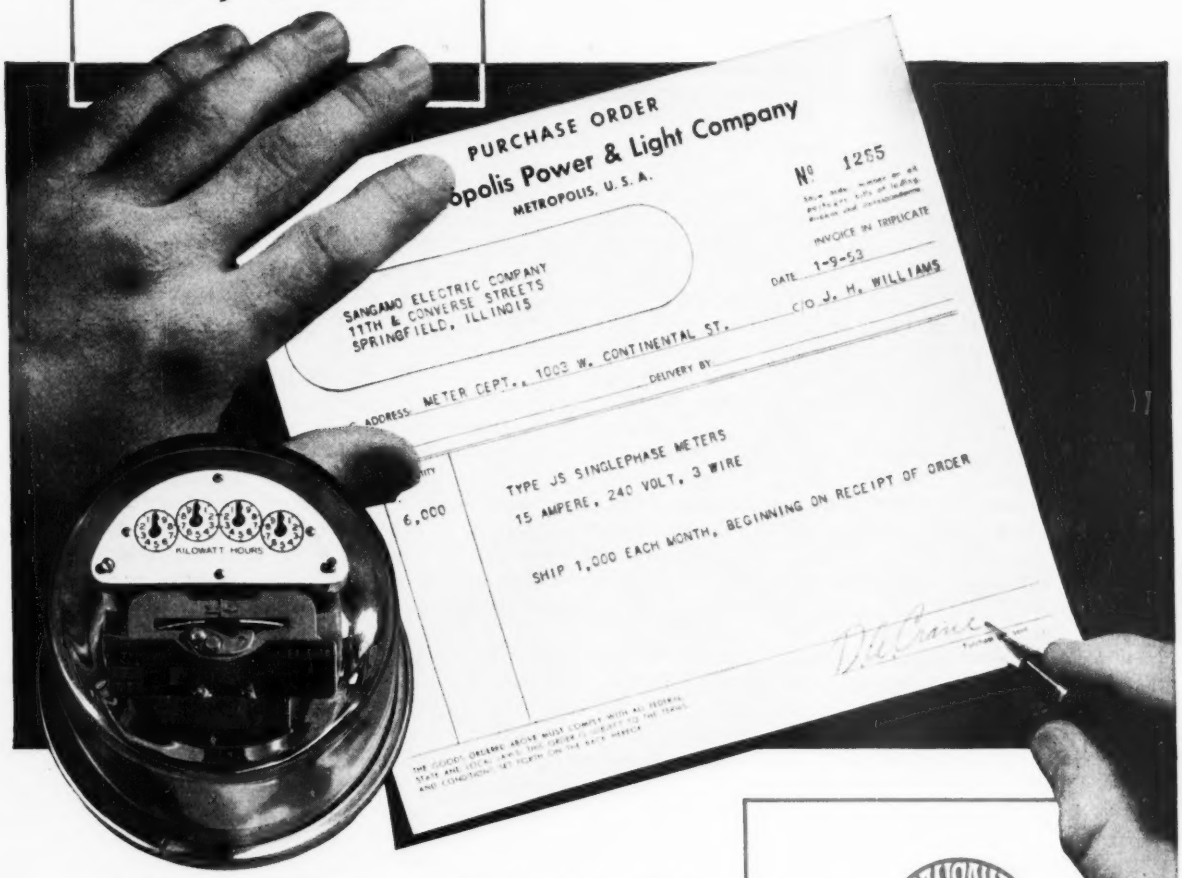
Wage Controls Ended by Eisenhower Order

President Eisenhower has issued an executive order dated Feb. 6 stating that "all regulations and orders issued pursuant to the Defense Production Act of 1950, as amended, stabilizing wages, salaries, and other compensation, are hereby suspended."

Daniel W. Tracy, president of the International Brotherhood of Electrical Workers, AFL, said elimination of the government's power to scale down wage increases agreed to by employers makes the job of writing wage contracts a whole lot easier.

a full measure of confidence

Sangamo J Meters



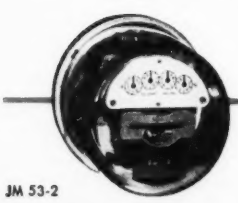
You can install Sangamo Type J Watthour Meters with complete confidence that your customers will neither be overcharged or undercharged. In the thirteen year performance record of J Meters, test records from utilities prove a remarkable degree of unchanged accuracy.

You can use J Meters in highly corrosive atmospheres for years with full confidence that both external and internal meter parts will resist the effects of corrosion. Sangamo's development of special anti-corrosion treatment and selection of materials prevents meter deterioration on outdoor installations, even under the most severe conditions.

You can buy Sangamo meters with absolute confidence that your choice will be approved by those who *know* meters—the men of your meter department.

SANGAMO

SANGAMO
ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS



Only Measured Facts are Known Facts

JM 53-2

WWP Is Ready to Negotiate...

. . . a deal on Feb. 28 with Puget Sound P&L stockholders for merger of two companies, Kinsey Robinson announces

We stand ready to negotiate a deal with Puget Sound Power & Light Co stockholders, Pres Kinsey M. Robinson of Washington Water Power Co told a special stockholders committee of Puget at a meeting held at the India House in New York City recently.

This committee was formed to oppose the proposed sale of Puget to Public Utility Districts. It represented more than 600,000 shares of the 2,177,879 common shares outstanding of Puget.

Negotiations Could Start Feb. 28 . . . The WWP president said that the deal could be negotiated on Feb. 28 "provided the PUD offer has been allowed to lapse and another will not be set up until we have a chance to put the deal up to our stockholders." The PUD pact is now the subject of litigation. One suit is scheduled to be heard on Feb. 16 in Olympia, Wash., and the other on Feb. 20 in Port Orchard, Wash.

Robinson urged the committee to bring pressure on Puget's Pres Frank McLaughlin to sit down and talk about the proposed merger. Puget's president had said recently that the committee was "just a creature of WWP." McLaughlin also said that letters will be sent out to stockholders with the current dividend checks which will reveal Puget management's position on the WWP and PUD proposals.

Committee Wants Stockholders' List . . . In order to take the proposed sale of Puget out of Pres Frank McLaughlin's hands, John Burns, counsel for the stockholders committee, is taking legal steps to obtain a Puget stockholders' list from the Massachusetts court.

"We are ready to deal in good faith, but we cannot waste more time," Robinson declared. He said that he had financing arrangements with a number of banking and financial institutions to take over Puget and pay the stockholders cash of $27 a share if they so desire it. Otherwise they can accept a share-for-share exchange of Puget stock for WWP common stock.

Robinson said that his company is not interested in obtaining Puget as a subsidiary but rather "we want a deal for a statutory merger." This will allow stockholders of Puget to accept WWP stock on a tax-free basis.

Motion Denied . . . A motion of the Kitsap County PUD for an order prohibiting the Thurston County PUD from issuing bonds or taking any other action to complete purchase of Puget by a group of PUD's has been denied in Thurston County Superior Court at Olympia.

The motion was preliminary to a full-scale trial on the purchase proposal on Feb. 16 in the Olympia court.

Commissioners C. E. Ferguson and J. W. Bryan of the Kitsap PUD had contended that PUD's, when acting together, must obtain approval of the state Public Service Commission for purchase of a private company's properties.

Judge John Langenbach disagreed, saying: "For such a purchase, a single district does not need the consent or approval of the commission, and two or more districts, by mutual agreement, possess the right and powers of a single individual district."

Case May Be Dismissed . . . It has been reported that Kitsap PUD is preparing a motion to dismiss the action it had brought against the Thurston PUD in the Olympia court.

The underwriting syndicate organized to finance the PUD purchase has placed in the hands of investment houses voluminous prospectuses of the proposed financing. The syndicate consists of Halsey Stuart & Co, Chicago, John Nuveen & Co, Chicago, and B. J. Van Ingen & Co, New York.

Under the financing proposal, the Chelan, Jefferson, Skagit, Thurston, and Snohomish PUD's would subscribe proportionately for the major issue of $84,295,000 to purchase the Puget Power generating facilities and transmission lines and also its distribution lines in King, Pierce, Kitsap, and Kittitas counties.

In addition to their $16,859,000 share in this issue, the Thurston, Skagit, and Jefferson PUD's would be responsible for additional bonds to buy the distribution systems in their own areas. This would amount to $11,710,000 for Skagit, $10,494,000 for Thurston, and $551,000 for Jefferson.

In each instance the bond maturities run from Oct. 1, 1959 to Oct. 1, 2004, with interest ranging from 3½% to 4%.

The prospectus discloses that Guy C. Myers, fiscal agent for the PUD's in the transaction, will receive a $720,600 commission in non-interest bearing revenue bonds which will mature in 40 semi-annual installments.

Standard P&L Files Plan to Retire Preferred Stock

Standard Power & Light Corp has filed a plan with the Securities and Exchange Commission for retirement on a voluntary basis of its 34,054 shares of $7 cumulative preferred stock ($25 per share stated value). SEC has issued an order scheduling the plan for hearing on Feb. 25.

The $7 preferred stock has a liquidation preference of $100 per share plus accrued and unpaid dividends, and is callable at $110 per share plus accrued and unpaid dividends. As of Dec. 31, 1952, accrued and unpaid dividends amounted to $102.31 per share. Thus, the total liquidating preference of the preferred at that date amounted to $202.31 per share and the total call price $212.31 per share.

Standard proposes to offer in exchange for each share of its preferred stock, three shares of Duquesne Light Co common stock, five shares of Wisconsin Public Service Corp common stock, and cash in an amount equivalent to the difference between $212.31, plus dividends accrued from Dec. 31, 1952, to the last date for acceptance of the exchange offer less dividends paid during such period, and the aggregate of the market values of the Duquesne and Wisconsin stocks offered.

If the exchange offer is accepted by two-thirds or more of the preferred stock, the stock of those stockholders

who do not accept will be retired for cash by call. If the offer is accepted by less than two-thirds of the preferred stock, the stock of those who do not accept will be retired at the election of the company by cash at call price, or under a compulsory plan by exchange of portfolio stocks or stocks and cash at the equivalent of call price, as soon as such call or compulsory plan proves practicable.

FINANCIAL BRIEFS

Virginia Electric & Power Co plans to sell $20 million 3.5% debentures due in 1978 to institutions. Company has revealed that 60% of the debentures would be retired before maturity —"a large part from reductions in taxes that result under the present law from interest payments but would not be available if the financing were accomplished with stock."

Atlantic City Electric Co stockholders will vote on proposal April 14 to increase authorized common stock from 1.4 million to 1.7 million shares and preferred from 150,000 to 200,000 shares . . . **Metropolitan Edison Co** has received Pennsylvania Public Utility Commission approval to buy the Violet Hill electric substation in York County from the Pennsylvania Water & Power Co for $110,000 . . . **New England Electric System** stockholders will vote on Feb. 24 on proposal to increase the authorized common stock from 8.5 million to 11.5 million shares.

Construction Expenditures for 1953 —Arizona Public Service Co will spend $21.4 million; Alabama Power Co, $39 million; California Oregon Power Co, $15.7 million; and Consumers Power Co, $58 million.

New York State Electric & Gas Corp has received renewal of a 25-year franchise by the Hamburg's Village Board. The franchise will run until Jan. 1, 1978, but the village specified the company must submit plans by Aug. 1 for landscaping the Prospect Avenue substation site and have the work done within six months thereafter. Sixty residents protested the company's substation when the franchise came up for public hearing about a month ago. They said the substation reduced the value of their homes and inconvenienced them.

Today in Utility Finance

YIELDS (%)

Quality	Bonds			Preferred Stocks			Common Stocks		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE									
1953									
Feb. 5	**3.07**	**3.12**	**3.19**	**4.11**	**4.26**	**4.58**	**4.96**	**5.30**	**5.65**
Jan. 29	3.05	3.09	3.18	4.10	4.27	4.58	4.95	5.31	5.65
END OF QTR:									
4th 1952	2.99	3.03	3.14	4.06	4.22	4.59	4.98	5.33	5.62
3rd 1952	2.99	3.03	3.16	4.10	4.26	4.61	5.18	5.59	5.96
2nd 1952	2.95	3.00	3.09	4.05	4.31	4.60	5.38	5.85	6.42
1st 1952	2.95	2.99	3.13	4.11	4.29	4.66	5.35	6.03	6.47

Data: Reis & Chandler, Inc.

EARNINGS—Preliminary

Company	Period Months Ended		Net Income 1952	Net Income 1951	Earnings Per Common Share 1952	Earnings Per Common Share 1951
Alabama Power	12	Dec.	$11,530,279	$11,100,178	$...	$...
California Electric Power	12	Dec.	2,735,991	1,605,833	0.89(a)	0.54(a)
Central Hudson Gas & Electric	12	Dec.	2,454,768	1,793,249	0.85(b)	0.72(b)
Consumers Power	12	Dec.	19,750,356	19,515,063	2.65	2.61
El Paso Electric	12	Dec.	1,537,042	1,457,448	1.92	1.82
Gulf States Utilities	12	Dec.	7,076,227	5,694,575	1.82(i)	1.61(i)
Idaho Power	12	Dec.	3,806,237	3,262,604	2.75(j)	2.87(j)
Long Island Lighting	12	Dec.	6,311,930	4,971,137	1.26(c)	1.37(c)
Middle South Utilities, consolidated	12	Dec.	3,511,243	10,942,965	1.91(e)	1.84(e)
Pacific Gas & Electric	12	Dec.	47,000,000	36,876,000	2.52(f)	2.14(f)
Tucson Gas, Electric L&P	12	Dec.	1,301,549	935,133	2.44(g)	2.39(g)
Virginia Electric & Power	12	Dec.	11,730,864	10,328,492	1.81(h)	1.71(h)

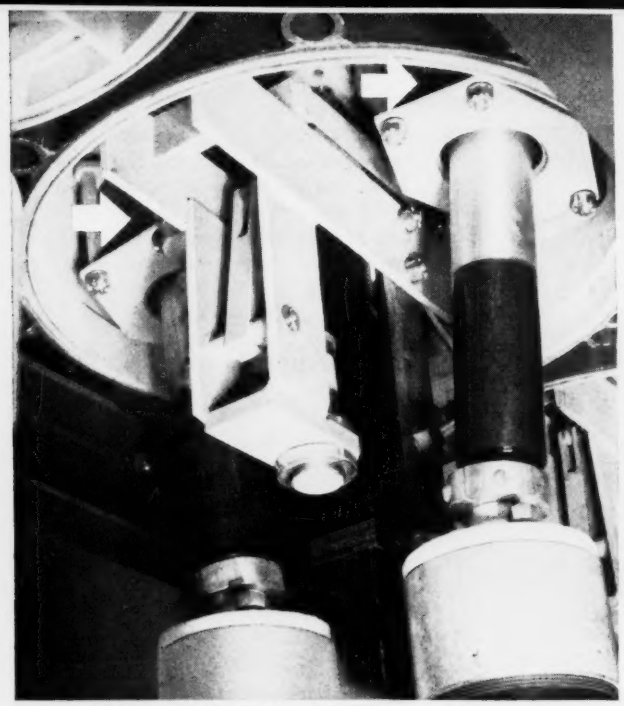
Notes—(a) Based on 2,353,551 shares in 1952 and 1,679,928 shares in 1951; (b) Based on 2,021,399 shares in 1952 and 1,737,476 shares in 1951; (c) Based on average shares outstanding in 1952 and 1951; (e) Based on 6,500,000 shares in 1952 and 5,937,500 shares in 1951 and excluding tax reduction of $1,388,317 in 1952 due to amortization of emergency facilities; (f) Based on 12,492,070 shares in 1952 and 11,001,529 shares in 1951; (g) Based on 500,000 shares in 1952 and 360,000 shares in 1951; (h) Based on 5,235,447 shares in 1952 and 4,759,389 shares in 1951; (i) Based on 3,124,168 shares in 1952 and 2,884,590 shares in 1951, and (j) Based on 1,125,000 shares in 1952 and 900,000 shares in 1951.

FINANCING

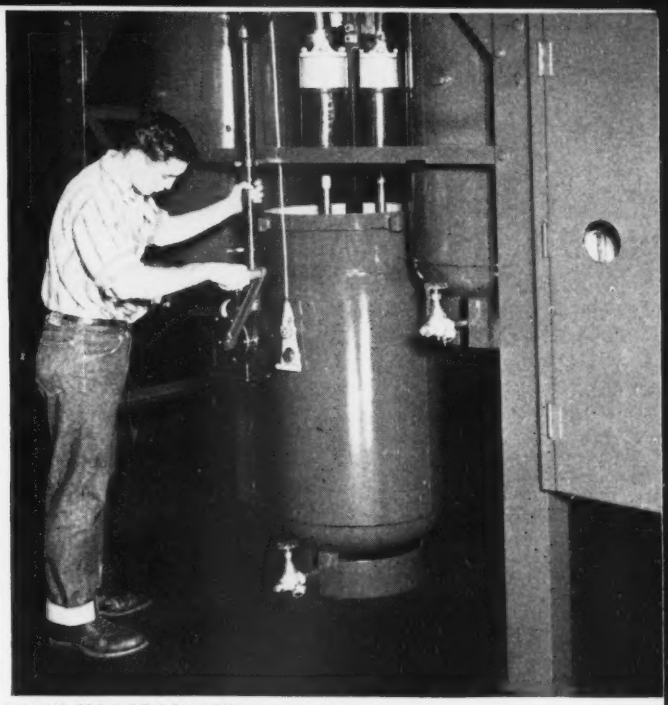
Company and Description	Amount of Offering (000)	Offering Price	Yield to Public / Bid Date
WEEK OF FEBRUARY 5-11			
Common Stock			
Illinois Power—250,000 sh	$9,906	$39.625	5.55%
SCHEDULE FOR FEBRUARY—MARCH—APRIL			
Bonds			**Bid Date**
Iowa Southern Utilities—1st mtg due 1983	$7,000	.....	Feb. 17
Consolidated Edison Co of New York—1st mtg due 1983	40,000	.....	Feb. 17
Niagara Mohawk Power—1st mtg due 1983	25,000	.....	Feb. 18
Indianapolis Power & Light—1st mtg	10,000	.....	Mar. 3
Fall River Electric Light—1st mtg due 1983	6,800	.....	Mar. 9
Narragansett Electric—1st mtg	10,000	.....	Mar. 10
Central Maine Power—1st general mtg due 1983	10,000	.....	Mar. 10
Lake Superior District Power—1st mtg	2,000	.....	Mar. 16
Public Service Co of Oklahoma—1st mtg	6,000	.....	Mar. 17
Mississippi Power & Light—1st mtg	12,000	.....	Mar. 17
Georgia Power—1st mtg due 1983	16,000	.....	Mar. 24
Dallas Power & Light—1st mtg	9,000	.....	Mar. 24
Florida Power & Light—1st mtg	15,000	.....	April 7
California Electric Power—1st mtg	8,000	.....	April 7
Texas Electric Service—1st mtg	9,000	.....	April 13
New Orleans Public Service—1st mtg due 1983	6,000	.....	April 14
Preferred Stock			
New England Power—80,140 sh $100 par (to be first offered to holders of outstanding 6% pfd on share-for-share basis about March 3 to March 23)	$8,014	.....	Mar. 3
Public Service Co of New Mexico—30,000 sh $100 par	3,000	.....	Mar. 17*
Georgia Power—100,000 sh no par	.....	.....	Mar. 24
Texas Electric Service—80,000 sh $100 par	8,000	.....	April 13
Common Stock			
Niagara Mohawk Power—1,000,000 sh	.....	.....	Feb. 16
California Electric Power—136,249 sh	.....	.....	Mar. 31
South Carolina Electric & Gas—358,045 sh (to be offered to commonholders on 1-for-7 basis, record Feb. 17 to expire Mar. 4; stockholders to be allowed oversubscription privileges)	.....	.....	.....
Southern Indiana Gas & Electric—114,167 sh (to be offered to commonholders on 1-for-6 basis, record Mar. 25 to expire April 10)	.....	.....	.....
Lake Superior District Power—29,761 sh (to be offered commonholders on 1-for-9 basis record about March 6; Robert W. Baird & Co. underwriters)	.....	.....	.....
Arizona Public Service—400,000 sh	.....	.....	.....#
Southern Co—about 1 million sh (to be offered to commonholders on 1-for-17 basis, record about April 16 to expire May 7)	.....	.....	.....
Public Service Electric & Gas—750,000 sh	.....	.....	Mar. 18##

Notes—* To be offered by Allen & Co, underwriters. # It is expected to be offered during the week of Mar. 9 by First Boston-Blyth & Co group, underwriters. ## Morgan Stanley & Co group will probably offer the stock.

NEW BREAKER, shown here assembled on factory floor, is designed so that all parts are easily accessible for inspection or maintenance. Positive indicating mechanism makes it easy to see breaker position (open or closed) from any angle.



TWO CURRENT TRANSFORMERS provide extra metering when needed. New design provides room for installation of two transformers *on each bushing* as shown.



TANKS MAY BE LOWERED in the field for easy access to bushings and contacts. This makes it unnecessary to drain oil during inspection or maintenance.

New G-E breaker interrupts with shorter arc to cut oil maintenance

New design features improve reliability, simplify maintenance

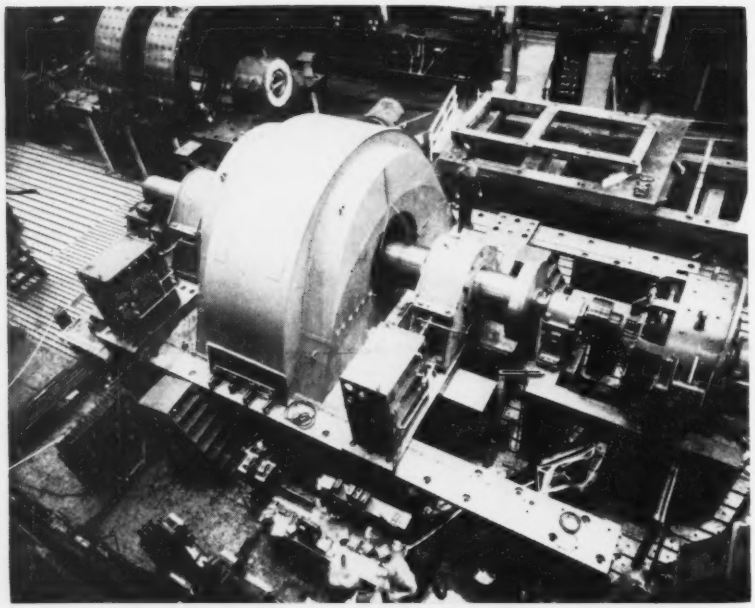
Improved service reliability and reduced need for inspection and maintenance are the outstanding advantages of the new Type FK-439 and 1200-ampere outdoor power circuit breakers.

New oil-blast interrupters cut oil carbonization by interrupting faults or load currents with short-arc lengths and low-arc energy. Silver-molybdenum surfaces on the interrupter contacts insure minimum erosion. As a result, fewer inspections will be found necessary, and oil maintenance requirements may be substantially reduced.

Contributing to greater reliability in service is a new, sturdy oil-filled bushing, Type LC. It is of center-clamp construction, thus eliminating all cemented joints. Lower ends of bushings are given a special coating to reduce the electrostatic deposit of carbon particles. This means even less maintenance. Space is provided for two current transformers on each bushing.

The new Type FK-439 breakers are powered by an improved pneumatic operating mechanism, which employs a simple pneumatic trip-free linkage design, completely eliminating the need for a flying latch. Simplified support framework, float-type oil gauge and more accessible pole-unit linkage are among the many detail improvements. For full information, call your local G-E sales representative or write to General Electric Company, Schenectady 5, N. Y. 872-1

GENERAL ELECTRIC



World's Most Powerful Motor . . .

. . . of 83,000 hp is one of two being completed by the Westinghouse Electric Corp for driving the wind tunnels of U. S. Air Force's Arnold Engineering Development Center at Tullahoma, Tenn. The motors will be coupled with two 25,000-hp motors to form a 216,000-hp drive for the compressors. Entire assembly will be the largest rotating machine ever built. Shown during completion of tests at the Westinghouse East Pittsburgh plant, the motor stands 21½ ft high and weighs 225 tons.

Motor-Generator Unit Reorganized by GE

General Electric Co has discontinued the small and medium motor department and its operation has been decentralized into three new product organizations.

In making this announcement, J. M. Crawford, vice president and general manager of GE's Motor and Generator Division, stated that this decentralization was essential to the better overall allocation of the manufacturing facilities and marketing functions of the assigned products.

A divisional marketing department was also established to facilitate a unified approach to all division marketing policies.

Department Heads . . . The four new departmental organizations and their managers are: Marketing department, Walker H. Henry, manager; medium induction motor department, Olaf F. Vea, general manager; direct current motor and generator planning study, Oscar L. Dunn, manager; and synchronous and specialty motor and generator department, Fred B. Hornby, general manager.

Headquarters for the first three organizations will be at Schenectady, N. Y., and the synchronous and specialty motor and generator department will be located at the GE Lynn (Mass.) River Works.

GE's San Jose (Calif.) motor plant has been assigned to the medium induction motor department and the synchronous and specialty motor and generator department will be responsible for all operations of the division at Lynn. The direct current motor and generator planning study assignment was made in anticipation of the establishment of a direct current motor and generator department.

Radiation Instruments Sell

Radiation instrument industry had an annual business volume of about $20 million and employed more than 2,400 persons in 1952, according to a survey of the Atomic Energy Commission. Military agencies provided approximately 50% of the total market; AEC and its principal contractors 30%; and the remainder was divided up among private industry, universities, hospitals and research institutes, civil defense, export, and uranium ore prospecting.

Legal Alien Ownership of Tacoma Plant Sought

Action of the current Washington State legislature is being sought to legalize ownership of an electrical equipment manufacturing plant at Tacoma by the Swiss Oerlikon Engineering Co, one of the world's biggest manufacturers in this field.

Although a law now on the books prevents any alien from owning land in the state, Oerlikon has a Tacoma plant in which it has an investment of $2 million. It now employs 150 persons in the manufacture of circuit breakers and hopes to increase this to at least 500, making bigger electrical equipment, according to F. A. Le Sourd of Seattle, attorney for the company.

To make the company legal, the legislature is being asked to pass a resolution calling for a vote at the next general election on amending the anti-alien land statute to allow land ownership by any foreign financed corporation which wants to establish a factory.

MANUFACTURING BRIEFS

Babcock & Wilcox Co plans to build a $2 million plant to build boilers and related equipment on a newly acquired 153-acre tract of land south of the city of Wilmington, N. C. This 135,000-sq ft unit will be the second plant of the company to be located in Wilmington. When it gets into operation about the middle of June, the new plant will employ about 750 men.

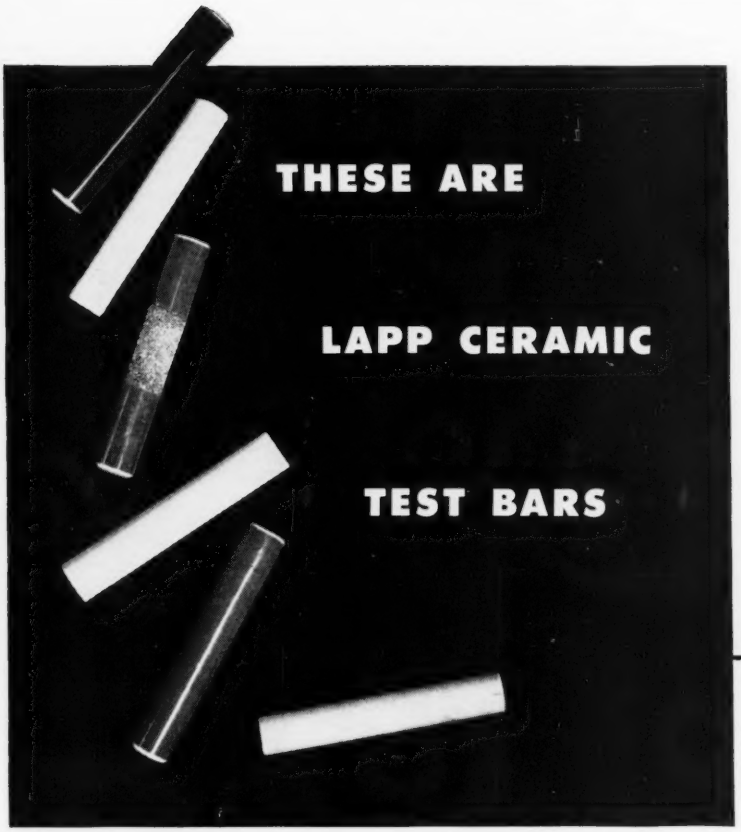
Edward Valves, Inc, East Chicago, Ind., has erected a two-story modernistic structure adjacent to its laboratory and research building. The new building, built almost entirely of stainless steel and glass, was constructed for Edward's engineering department.

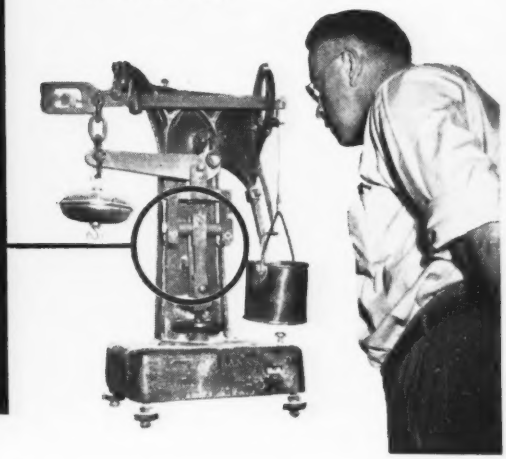
Minnesota Mining & Manufacturing Co has purchased a 125-acre tract on the eastern boundary of the city of

These one-inch-diameter ceramic rods are manufactured on a routine basis as part of the Lapp quality control program. They provide an accurate index to the modulus of rupture of the Lapp body, body-and-glaze combinations, and sanded cementing surfaces. Equally important is the use of this basic strength test in evaluating new ceramic development—a 52-weeks-a-year job at Lapp.

On a Shop Order schedule, four-foot-long rods are made, from which these standard-length sections are cut. Rods are ordered, as part of the regular production of the day's run, with unglazed, glazed and sanded surfaces. Even unfired rods are tested, to measure "dry strength" of the body.

Lapp has long known that maximum strength of porcelain can be achieved only through correct "fit" of glaze on body, and that strength of cemented surfaces is critically dependent on the balanced combination of glaze "fit" and sand particle nature and size.





At Lapp, porcelain quality is a matter of scientific exactitude. The "pay-off" comes on the power systems of America, where high voltage insulators, and "special porcelain" parts for electrical equipment deliver an extra margin of operating security.

On the insulators you use, on the porcelain parts of equipment you buy, look for the name LAPP. For—although *you can buy cheaper porcelain —you can't buy better porcelain*—than Lapp.

Lapp Insulator Co., Inc., Le Roy, N. Y.

Lapp

St. Paul for a long-range building program for research purposes. The first unit in the multi-million dollar development will be a $3-million laboratory for 3M's central research department. Construction of this unit will start this spring and will be completed in the fall of 1954. The two-story structure will contain about 100,000 sq ft.

In line with its plant modernization program, Jefferson Electric Co recently constructed a $850,000 one-story addition to its Bellwood, Ill., plant. The firm has also enlarged the testing facilities of its engineering department in the Bellwood plant. The new addition, which will have 30,400 sq ft of floor space, is scheduled to start manufacturing transformers this April. The expanded engineering facilities, costing about $45,000, permit enlargement of Jefferson's research-testing program.

SALES ASSIGNMENTS

COMPANY STAFFS

Allis-Chalmers Manufacturing Co's General Machinery Division has announced the following district office appointments: Roland H. Cline has been named manager of the Charlotte (N. C.) district office and Fred C. Timberman will manage the newly established Akron branch of the Cleveland district office. The following sales representatives have also been appointed: John H. Gerber and James R. Donaldson are assigned to Milwaukee; William S. Wright, Grand Rapids, Mich.; William H. Smith, Pittsburgh; Stanley B. Lamica, Tampa, Fla.; Byron E. Johnson, Dallas; Melvin G. Williamson, Fort Worth; Charles J. Thiesen, Tulsa; and Kenneth J. Fletcher, Portland, Ore.

Dynamatic Corp, Kenosha, Wis., a subsidiary of Eaton Manufacturing Co, has appointed Eugene Pohl as district manager of its newly opened Philadelphia office, which is located at 4525 North Broad St.

REPRESENTATIVES

Interstate Drop Forge, Milwaukee, has appointed five new sales agents, for its Special Products Division. Earl Nevins and Robert Larson, 3843 Sheridan Ave., S., Minneapolis, will cover Minnesota, North and South Dakota. Add Morris, 1813 Holmes Street, Kansas City, Mo., will handle Missouri, Kansas, Nebraska, and Iowa Harry F. Hess, 3406 Lindenwood Ave., Dallas, will cover Texas, Oklahoma, and Louisiana, and Albert S. Wirtner, 57 Post Street, San Francisco, will have a territory including California, Washington, and Oregon.

Copes-Vulcan Division of Continental Foundry & Machine Co, Erie Pa., has appointed the following firms as representatives for Copes-Vulcan products: Cochrane Engineering Corp, Chicago; Barnes Engineering Co, Indianapolis; W. E. Veenschoten, Birmingham, Ala.; Gil Moore & Co, Los Angeles and San Francisco; and Pacific Steam Control Co, Seattle, Wash.

MEETINGS CALENDAR

*** Edison Electric Institute**
Electrical Equipment Committee, Jefferson Hotel, St. Louis, Mo., Feb. 16-17; Industrial Power-Heating Section, Schenley Hotel, Pittsburgh, Feb. 16-17; 19th Annual Sales Conference, Edgewater Beach Hotel, Chicago, Mar. 30-April 2; Accident Prevention Committee, Edgewater Beach Hotel, Chicago, May 4-5; Transmission-Distribution Committee, Edgewater Beach Hotel, Chicago, May 5-6; Electrical Equipment Committee, Sir Walter Hotel, Raleigh, N. C., May 11-12; Meter-Service Committee, Wentworth-by-the-Sea, Portsmouth, N. H., May 25-27; 21st Annual Convention, Atlantic City, N. J., June 1-4.

Pennsylvania Electric Association
Systems Operation Committee, Hotel Brunswick, Lancaster, Pa., Feb. 19-20; Prime Movers Committee, Benjamin Franklin Hotel, Philadelphia, Feb. 26-27.

Canadian Electrical Association
Following Western Zone Division Meetings will be held at Palliser Hotel, Calgary, Alta.; Engineering, Feb. 23-25; General Division, Feb. 25-26; Sales Division, Feb. 26-27; Annual Convention, Manoir Richelieu, Murray Bay, Que., June 25-27.

National Adequate Wiring Conference
La Salle Hotel, Chicago, Feb. 26-27.

Southern Safety Conference-Exposition
Hotel Atlanta Biltmore, Atlanta, Ga., March 1-3.

Public Utilities Advertising Association
Region 1, Parker House Hotel, Boston, Mar. 4-5; Region 5, Jefferson Hotel, Richmond, Va., Mar. 12-13; National Convention, Chase Hotel, St. Louis, May 7-8.

Pacific Coast Electrical Association
Engineering-Operating Section Conference, Long Beach, Calif., March 5-6; Administrative Services Section Conference, Phoenix, Ariz., April 8-9; Annual Convention, Hoberg's, Lake County, Calif., May 13-15.

North Central Electric Association
Electrical Industries Meet, Hotel Nicollet, Minneapolis, March 8-11; Accounting Conference, Dyckman Hotel, Minneapolis, March 23-24; Accident Prevention Committee, Dyckman Hotel, Minneapolis, Minn., April 21; Distribution-Equipment Engineering Meeting, Dyckman Hotel, Minneapolis, April 22; South Dakota All-Electrical Industry Meeting, Ward Hotel, Aberdeen, S. D., April 24-25.

North Central Electrical Industries
1953 Electrical Industry Convention, Hotel Nicollet, Minneapolis, March 8-11.

National Association of Purchasing Agents
Public Utility Buyers Group, Mid-Winter Conference, Hotel Roosevelt, New Orleans, March 9-10; Annual Meeting, Statler Hotel, Los Angeles, May 24-27.

National Electrical Manufacturers Association
Winter Meeting, Edgewater Beach Hotel, Chicago, March 9-12; Annual Meeting, Nov. 9-12.

National Association of Corrosion Engineers
1953 Conference-Exhibition, Sherman Hotel, Chicago, March 16-20.

*** Illuminating Engineering Society**
Canadian Regional Conference, Chateau Laurier, Ottawa, Ont., March 23-25; Southwestern Regional Meeting, Hotel Baker, Dallas, Tex., April 12-14; Pacific Northwest Regional Conference, Multnomah Hotel, Portland, Ore., April 23-24; East Central Regional Conference, Hotel Lord Baltimore, Baltimore, Md., May 14-15; Southern Regional Conference, Sedgefield Inn, Greensboro, N. C., May 18-19; Great Lakes Regional Conference, Syracuse Hotel, Syracuse, N. Y., May 25-26.

A&M College of Texas
Conference for Protective Relay Engineers, Dept. of Electrical Engineering, College Station, Tex., March 23-25.

Southeastern Electric Exchange
20th Annual Conference, Boca Raton Hotel, Boca Raton, Fla., March 23-25; Engineering-Operation Section, Edgewater Gulf Hotel, Edgewater Park, Miss., April 16-17; Industrial Power Sales Conference, Fort Sumter Hotel, Charleston, S. C., May 21-22.

Institute of Radio Engineers
National Convention-Exhibit, Waldorf-Astoria Hotel and Grand Central Palace, New York, March 23-26.

American Power Conference
Annual Meeting, Sherman Hotel, Chicago, March 25-27.

Oklahoma Utilities Association Convention,
Tulsa Hotel, Tulsa, March 26-27.

Northwest Electric Light & Power Association
Engineering-Operation Section, Multnomah Hotel, Portland, Ore., Apr. 8-10; Business Development Section, Davenport Hotel, Spokane, Wash., May 4-6.

Missouri Valley Electric Association
Engineering Conference, President Hotel, Kansas City, Mo., Apr. 8-10.

Northwest Public Power Association
Engineering-Operation Section, Osbourn Hotel, Eugene, Ore., April 16-17; Annual Convention, Ridpath Hotel, Spokane, Wash., May 6-8; Accounting Section, Monticello Hotel, Longview, Wash., Sept. 17-18.

Maryland Utilities Association
Annual Business Conference, Lord Baltimore Hotel, Baltimore, April 17; Fall Conference, Cavalier Hotel, Virginia Beach, Va., Sept. 18-19.

Electric-Gas Utility Accountants
National Conference, Sherman Hotel, Chicago, April 20-22.

American Institute of Electrical Engineers
Southern District Meeting, Louisville, Ky., April 22-24; Northeastern District Meeting, Copley Plaza Hotel, Boston, April 29-May 1; Summer General Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 15-19; Pacific General Meeting, Hotel Vancouver, Vancouver, B. C., Sept. 1-4.

Rocky Mountain Electrical League
Annual Spring Conference, Shirley Savoy Hotel, Denver, Colo., April 26-28.

***American Society of Mechanical Engineers**
Spring Meeting, Deshler-Wallick Hotel, Columbus, Ohio, April 28-30; Semi-Annual Meeting, Statler Hotel, Los Angeles, June 28-July 2.

Chicago Electrical Industry Show
Sponsored by Electric Association and Electrical Maintenance Engineers of Chicago, Conrad Hilton Hotel, Chicago, May 11-14.

Third International Congress On Electro-Thermics
Paris, France, May 18-23.

Electrical Manufacturers' Representatives Association of Michigan, Inc
1953 Electrical Exhibition, State Fair Grounds, Exhibition Bldg., Detroit, May 19-22.

National Association of Electrical Distributors
45th Annual Convention, Conrad Hilton Hotel, Chicago, May 24-29; Spring Meeting, Pacific Zone, Huntington Hotel, Pasadena, Calif., June 8-10.

***California Municipal Utilities Association**
Annual Conference, Clift Hotel, San Francisco, June 9-12.

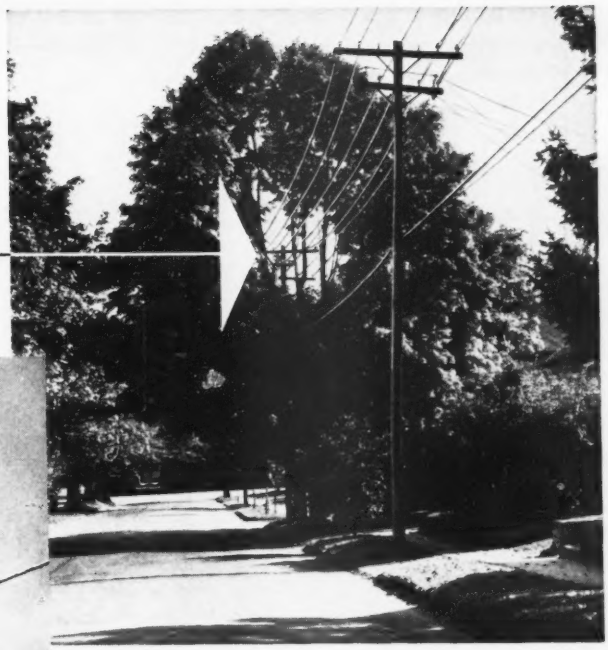
American Welding Society
National Spring Technical Meeting, Shamrock Hotel, Houston, Tex., June 16-19.

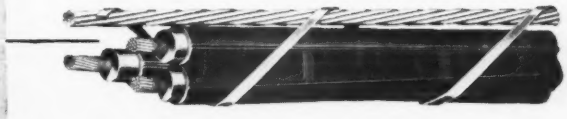
American Society for Testing Materials
Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 29-July 3.

Instrument Society of America
8th National Instrument Exhibit, Sherman Hotel, Chicago, Sept. 21-25.

*** Addition this week.**

Why trim trees like this





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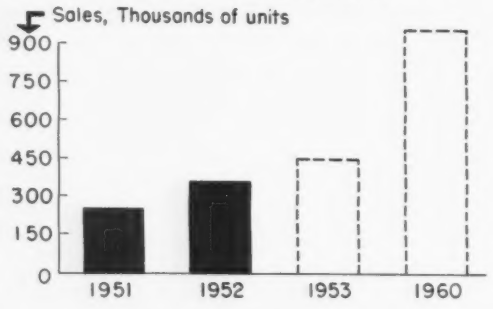
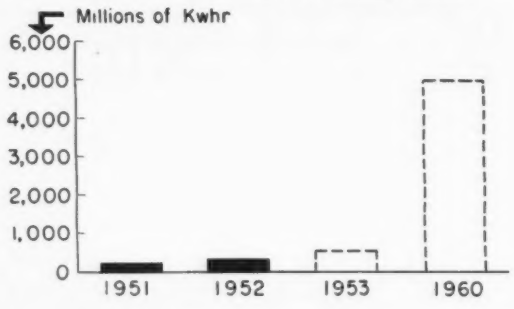
Air conditioning sales are going up . . .



Source: 1951, 1952, Electrical Merchandising
1953, 1960 Estimate by McGraw-Hill Department of Economics

. . . adding substantially to utility loads



Based on homes containing units on January 1

Source: Estimates by McGraw-Hill Department of Economics

The Home Cooler Market Is Growing

Home air conditioning is making a growing contribution to residential sales of electrical energy. Air conditioning is expected to become a major source of home energy consumption within the next ten years.

Trends in sales of room air conditioning units (chart above, left) show the possibilities. The room cooler is a real "growth" appliance. Sales have risen sharply every year since the war. Manufacturers sold about 43,000 units in 1947; last year manufacturers' sales reached 341,000. Predictions of sales in 1953 vary, running from 450,000 to 550,000. Chances are the weather will decide what the final total is; last year's hot spell boomed sales at retail. Retail sales were probably 50,000-75,000 greater than the manufacturer's figure shown on the chart.

Acceptance Is Increasing . . . Very few homes now have room air conditioners, despite the rise in sales. **Electrical Merchandising** estimates that only about 1.3% of wired homes were equipped with room coolers on January 1, 1953. So the market for these appliances is just beginning to develop. But acceptance is rising fast; only about 0.8% of wired homes had room coolers a year ago.

Sales may reach close to 1 million a year by 1960 as the result of normal growth in public acceptance plus mechanical and esthetic improvements. One industry expert thinks that the market may be about 10% saturated by 1960. That might mean that about 5 million homes would be using room air conditioners.

It is difficult to estimate the total power consumption of these home air conditioners. Units use an average of about 1,000 kwhr of electricity each year. But many homes contain more than one unit.

Looking to 1960 Sales . . . Thus the chart (above, right) shows only a minimum estimate of power consumption by home room coolers. It's based on the number of homes containing units on Jan. 1 of each year, with one unit assumed for each home. Yet the total even with these limiting assumptions is large, and growing very fast. Considering the minimum character of the estimate, room coolers could be making a substantial contribution to residential sales by 1960.

Furthermore, the contribution comes at just the right time—in late June, July, August and early September. Room air conditioners can go a long way to smoothing out the summer bottom in residential power sales.

Room coolers are a growing factor in industrial and commercial sales, too. Manufacturers now estimate that 20%-40% of all room air conditioners go to buyers outside the home.

Air conditioning of entire homes may eventually be more important than room cooling as a market for electric energy. Many expensive houses are being air conditioned, and many home builders are planning to put air conditioning in houses in the under-$15,000 class this year.

Air conditioning is fairly common in Southern homes, but it's still a luxury in the North. The first widespread attempts to crack the middle and lower priced Northern markets with air conditioned houses will come this year.

The Cost Is Still High . . . Builders seem to be optimistic about their chances for selling air conditioned houses for less than $15,000 in the North. But it's still true that air conditioning costs lots of money—perhaps $600-$1,200 for an average six-room house. Progress at such prices may be fairly slow.

In addition, adding luxury features that boost the cost of homes runs counter to what some people feel is the real current need in housing—larger homes at reasonable prices. But whatever the short-run problems, air conditioning in homes certainly will become important soon.

In the meantime, room coolers won't be bad substitutes as electricity load builders. Actually, they use about 1,000 kwhr per year, compared to about 2,000 for air conditioning an entire small six-room house.

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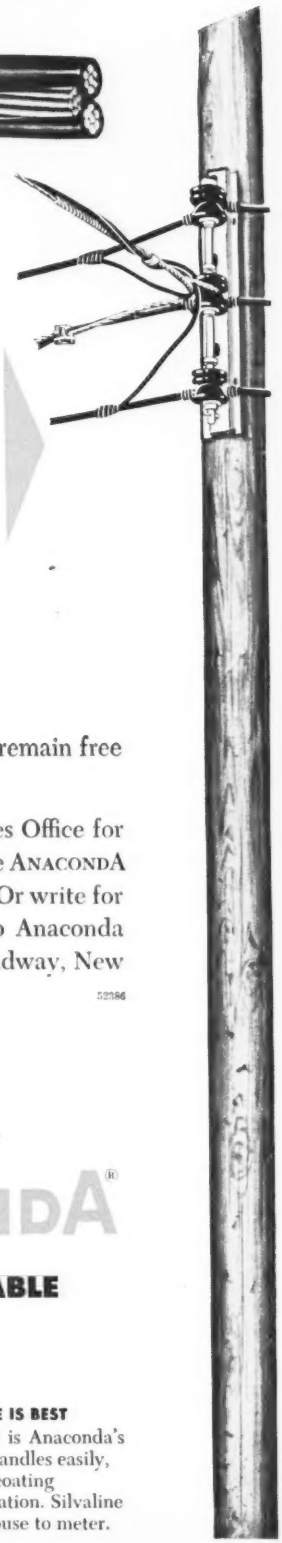

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TWO INSULATED CONDUCTORS are wrapped around a bare neutral messenger so that the full support of the assembly is borne by the messenger wire. The conductors remain free of tension.

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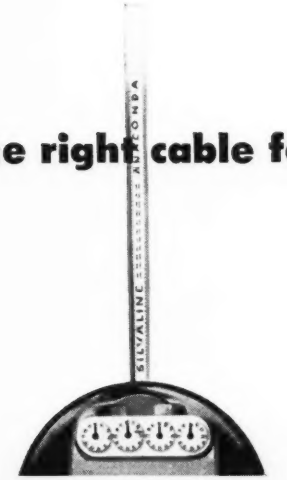

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Weatherproof Silvaline* (URC Type SE) is Anaconda's completely new service entrance cable. It handles easily, offers long service life, and its silver finish coating may be painted without danger of discoloration. Silvaline is approved for installation from pole to house to meter.
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